

The **IRON AGE**

September 3, 1959 A Chilton Publication

The National Metalworking Weekly



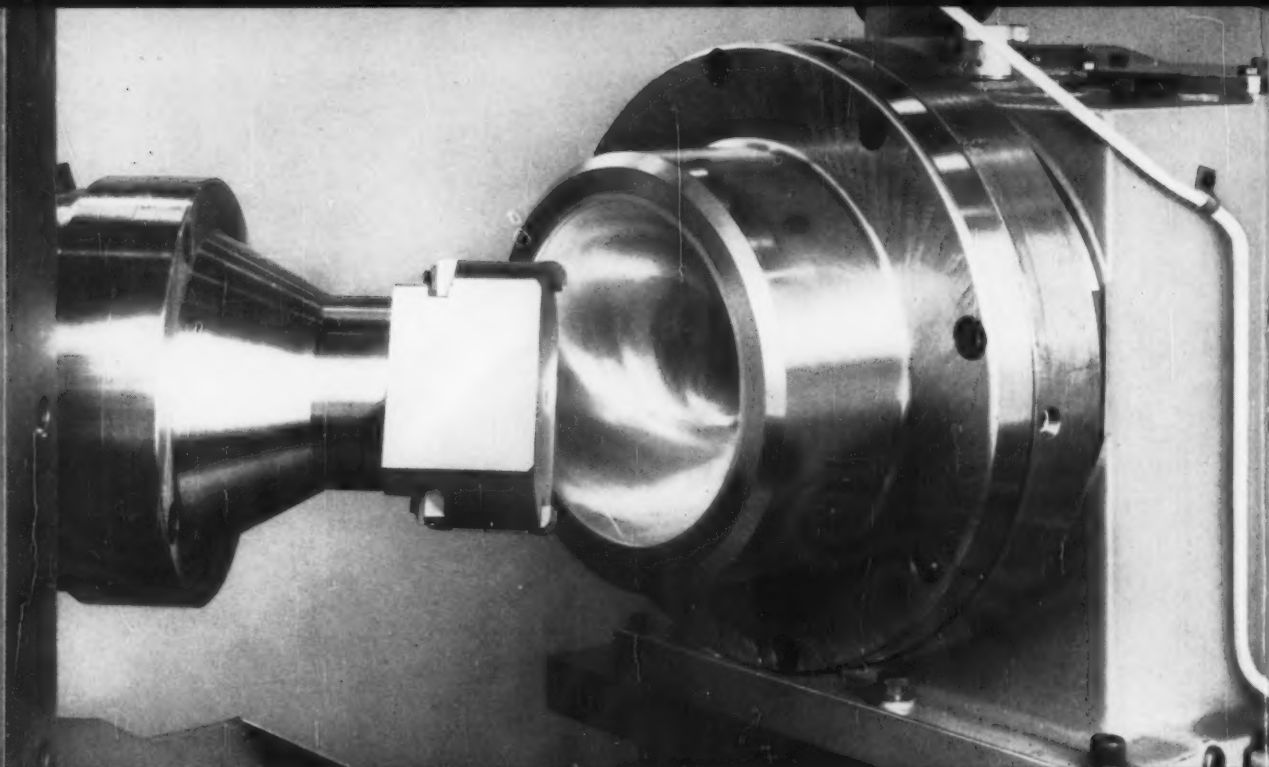
GM's Corvairs Ready to Roll—

**New Small Cars:
Size Is Only
Part of the Story P. 35**

**How Metalworking
Pays Top Men — P. 40**

**How Patent Searches
Aid Product Design — P. 75**

Digest of the Week — P. 2-3



EX-CELL-O CUSTOM TURNING MACHINE MEETS DEMAND WITH PERFORMANCE

WORK: Rough and finish turning of I.D. and O.D. with automatic cycling between loads.

ACCURACY: Less than .0001" tolerance on radii and .0001" on total wall thickness. Surface finish to 10 rms.

MATERIAL: Wrought or forged annealed aluminum hemispheres, 6" to 16" dia.



Custom-equipped with gages, spindle tachometers and other features, hemisphere-turning machine is a job-tailored "special"—yet it is designed to accommodate future production changeover.

59-34

Here are just a few of the reasons why this special Ex-Cell-O Turning Machine meets demand with precision performance—every time:

An extremely accurate and rigid work spindle helps slim-down the hemispheres shown at a rate of 15 cu. in. per minute with a $\frac{1}{8}$ " cut. Separate variable-speed hydraulic motors give cutter speeds from 50 rpm to 2500 rpm, and work spindle speeds from 1/18 rpm to 4 rpm. Dial gages provide constant checks on work spindle slide and cutter plunge depth. Vacuum chucks hold the work securely, and full electrical interlocking protects operator and machine during production.

Perhaps a similar Ex-Cell-O special machine—

designed to handle future work as well—is the answer to a production problem in your operation. Call your Ex-Cell-O Representative, or write direct for full details.

PRECISION FOR EX-CELL-O



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DETROIT 32, MICHIGAN

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EX-CELL-O PRECISION PRODUCTS INCLUDE: MACHINE TOOLS • GRINDING AND BORING SPINDLES • CUTTING TOOLS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • TORQUE ACTUATORS • THREAD AND GROOVE GAGES • GRANITE SURFACE PLATES • AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

|| **KNOW YOUR ALLOY STEELS . . .**

This is the second of a series of advertisements dealing with basic facts about alloy steels. Though much of the information is elementary, we believe it will be of interest to many in this field, including men of broad experience who may find it useful to review fundamentals from time to time.

Effects of Elements Used in Alloy Steels

To simplify a rather complex subject, let's outline some of the individual effects of four leading alloying elements used in alloy steels:

Nickel—One of the fundamental alloying elements, nickel provides such properties as deep hardening, improved toughness at low temperatures, low distortion in quenching certain types of tool steels, good resistance to corrosion when used in conjunction with chromium in stainless grades, and ready response to economical methods of heat-treating.

Chromium—This element is used extensively to increase the corrosion-resistance of steel. It also improves the surface resistance to abrasion and wear. It exerts a toughening effect and increases the hardenability.

Molybdenum—This element exerts a strong effect on the hardenability and toughness of steel. It greatly increases short-time and long-time strength at high temperatures.

Vanadium—An element used to refine the grain and enhance the mechanical properties of steel.

A combination of two or more of the above alloying elements usually imparts some of the characteristic properties of each. For example, chromium-nickel grades of steel develop good hardening properties with excellent ductility. And chromium-molybdenum steels develop excellent hardenability with satisfactory ductility and a certain amount of heat-resistance. In other words, the total effect of a combination of alloying elements is usually greater than the sum of their individual effects. This interrelation must be taken into account whenever a change in a specified analysis is evaluated.

Bethlehem metallurgists can be of considerable help to you in selecting the proper alloy steel for any use. These men will gladly give unbiased advice on alloy steel analysis, heat-treatment, machinability, and expected results. Feel free to call upon them at any time.

And please remember, too, that Bethlehem manufactures all AISI standard alloy steels, as well as special-analysis steels and the full range of carbon grades. You can rely upon their quality, always.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
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THE IRON AGE
Chestnut and 56th Sts.
Philadelphia 39, Pa., SH 8-2000

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Indexed in Applied Science & Technology Index and Engineering Index.



Copyright 1959 by Chilton Company
The Iron Age, published every Thursday by CHILTON COMPANY, Chestnut & 56th Sts., Philadelphia 39, Pa. Second class postage paid at Philadelphia, Pa. Price to the metalworking industries only or to people actively engaged therein, \$5 for 1 year, \$8 for 2 years in the United States, its territories and Canada. All others \$15 for 1 year; other Western Hemisphere countries, \$25; other Foreign Countries, \$35 per year. Single Copies 50¢. Annual Review Issue \$2.00. Cable: "Ironage." Philadelphia.

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September 3, 1959—Vol. 184, No. 10

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*Starred items are digested at right.

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Capabilities Lag—Measurement capabilities trail space-age requirements. The lag now costs millions of dollars each year. P. 37

STEEL IMPORTS

Strike Won't Boom Sales—Suppliers of imported steel are not banking on the strike to boost their



U. S. sales. There are many reasons why imports will have limited effect while strike lasts. P. 38

STRIKE TALK

No Progress—Impasse continues as steel strike goes into its eighth week. Both sides are still far apart on key issues and no meeting of the minds is likely. P. 39

EXECUTIVE PAY

Salaries Slump—Top men in the metalworking industry got pay cuts last year because of the recession.

Metalworking



COVER FEATURE

FLOOD OF SMALL CARS: For years, Big Three automakers considered small cars as having only nuisance value. Now big automakers are prepared to flood the market with their versions. For what's new from Detroit see exclusive IRON AGE photos and story. P. 35

Of the entire industry, industrial machinery men suffered most. P. 40

MINING PROBLEMS

Congressional Pressure—Congress is calling for study into the problems facing the domestic mining industry. Lawmakers make it clear they want import restrictions. P. 57

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PATENT SEARCHES

Pay Their Way—It's true that the large sums of money invested in new developments are protected by the U. S. patent system. But too many companies overlook the fact that most patents are open for inspection at any time. Reviews of such data can stimulate creative design thinking. P. 75

MODERN FACTORY DESIGN

Aids Precision Processing—Special conditions govern the quality of precision ball bearings. Dust, light and air can upset these close tolerances, if not properly controlled. P. 78

UPGRADE STEEL DOORS

With Honeycomb Design—At first glance, it might seem that something as simple as a door would long since have reached its final state of development. But here's a company that has converted all its hollow-door lines to

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NEW PLANS UNDERWAY

For Hot Strip Mills—Those that were up to date 20 years ago are being overloaded with today's demands. Here's a report on industry's plans to take advantage of new developments. P. 84

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With Capacitor Discharges—Ceramic bonding is now possible with capacitor-discharge heating. The same method can also be used for sintering many materials. P. 86

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EFFECTIVE SELLING

Code Your List—Lists of customers and prospects coded by SIC classes are valuable sales tools. They show where to put the sales effort for effective selling. P. 49

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From Today's Research—How will the metals industries profit from atomic research? Nuclear labs are on the threshold of new, far-reaching discoveries in nuclear science. Who's to say where research ends and application begins.

MINING IN OREGON

Means Metalworking Sales—Oregon's high-riding minerals industry is creating a healthy market for metalworking equipment and services. New projects should increase minerals output even more. P. 59

MACHINE TOOLS

New Line Introduced—A new line of electrical discharge machines, capable of handling a wide variety of jobs, has been developed by Cincinnati Milling. P. 61

STEEL SUMMARY

Sold Out—New orders placed for hot, cold-rolled and galvanized sheets will not be filled for five to six months after strike ends. More shortages start to show up. P. 105

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YOU CAN CUT INVENTORY INVESTMENT OF MECHANICAL TUBING

If you depend on B&W and your local Steel Service Center . . . because:

- ... your local Steel Service Center maintains large and diversified mechanical tubing stocks, available to you for immediate delivery
- ... your local Steel Service Center can help you cut handling and storage costs and maintain production continuity

And when it comes to mechanical tubing, ask for B&W Job-Matched Tubing. For information on how this tubing can reduce your production costs call the local B&W District Sales Office or write for Bulletin TB-352. The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pennsylvania.



Metal Show—Booth 528
International Amphitheater
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B&W

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B.F. Goodrich

All B.F. Goodrich Grommet V belts are double-matched at no extra cost

B.F. Goodrich V belts now have 40% greater horsepower rating

ALL B.F. Goodrich V belts now have 40% greater horsepower rating. This higher capacity rating was formerly found only in high capacity belts, but now costs *no more than former standard belts*. This means that lighter, more compact, and lower cost drives can now be used, because these B.F. Goodrich belts carry the horsepower needed for efficient drives using fewer belts at standard belt prices. And all B.F. Goodrich Grommet belts are double-matched.

Double matching assures you that

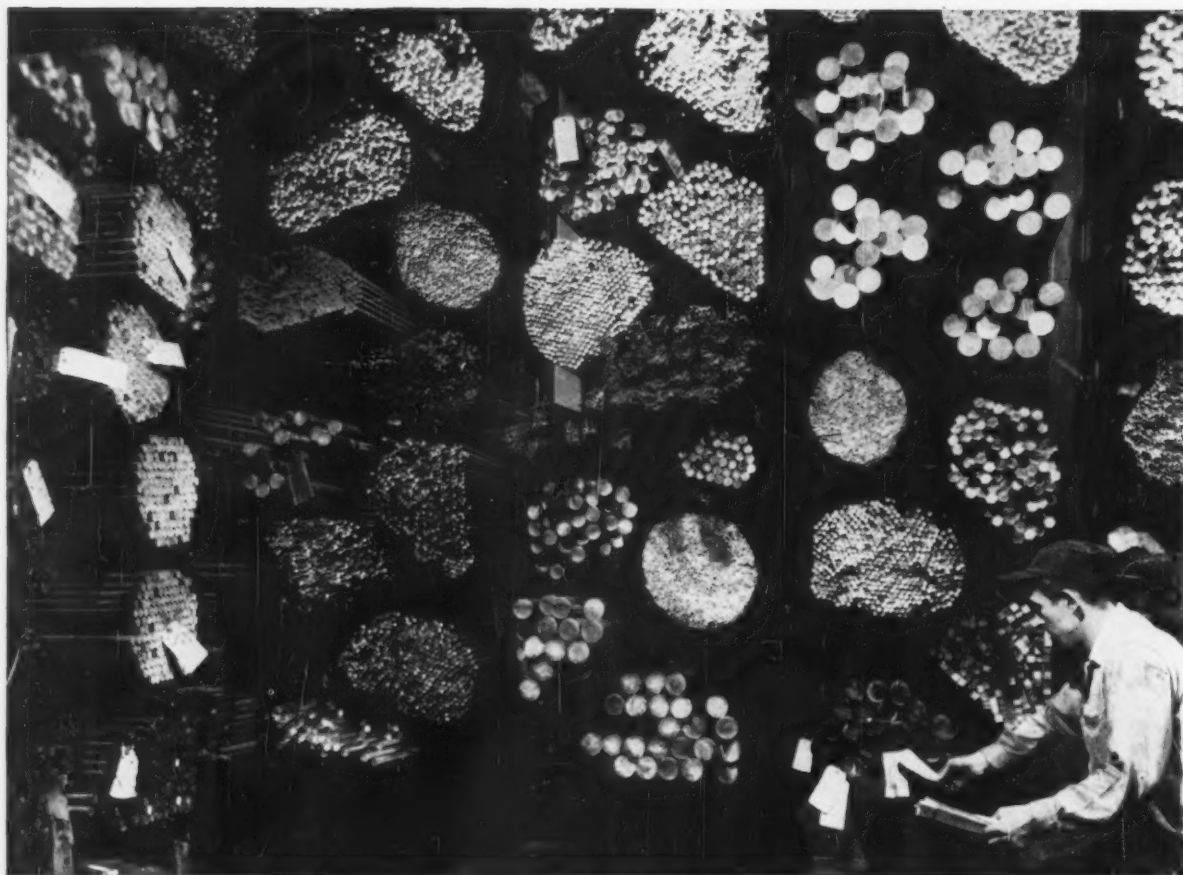
a set of B.F. Goodrich V belts are of equal length when installed and will stay uniform in length for the life of the belts. When V belts of different lengths are put on the same drive, longer belts loaf, while shorter ones carry all the load and fail quickly. B.F. Goodrich double-matched belts are measured *twice* for uniform length, once when manufactured and again after storage. Only belts that are of equal length when manufactured and after storage are grouped into sets.

Grommet construction is exclusive

in B.F. Goodrich V belts. Grommets are two extra strong cord loops, inside the belts, like twisted cables, except they are endless. Unlike ordinary belts, there are no center cords in the Grommet belt, so it is more flexible, can "give" temporarily and absorb shock loads.

Let your B.F. Goodrich distributor show you how this higher capacity, longer belt life, ability to stand hard use, can reduce your V belt costs per year and make other savings in operating and maintenance costs. *B.F. Goodrich Industrial Products Co., Dept. M-669, Akron 18, Ohio.*

B.F. Goodrich v belts



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☒ **SIZE RANGE.** Size ranges on hand at Ryerson are second to none, even including hard-to-get intermediate sizes. Shafting . . . screw machine steel . . . accuracy stock . . . machinery steel—every type of cold finished bar awaits your call.

☒ **Know-How.** Every day Ryerson steel men—*specialists* in cold finished bars—are in touch with machining problems . . . latest techniques. This unequalled fund of experience is ready to serve you in selecting a steel that gives faster machining to closer tolerances . . . better finish.

☒ **Reliability.** Year in and year out your most reliable source for cold finished bars is Ryerson. Call today. Prompt, personal service from experienced steel men proves that Ryerson service saves you time and money on your order for a few bars—or a truckload.



Widest size range always on hand, even including hard-to-get intermediate sizes.



Shafting stock receives special care to insure protection of finish and straightness.



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Joseph T. Ryerson & Son, Inc., Member of the  Steel Family

STEEL • ALUMINUM • PLASTICS • METALWORKING MACHINERY
NATION'S MOST COMPLETE SERVICE CENTERS IN PRINCIPAL CITIES COAST TO COAST

Dear Old Labor Day: This Year It Has A Message

Way back years ago, Labor Day was somewhat like the day the circus came to town. It was the end of summer vacations. And it was always good for a parade of glassworkers, coal miners and other old line social-union groups.

Things are quite changed today. Unions are big business. They cover entire industries. They can, and often do, shut down hundreds of plants with little or no fanfare—or resistance.

For many years now, big-time unions have had a firm grip on mass-producing industries. They have run their activities like big business used to be run—with an iron hand. The image of the old-fashioned social union with its personal approach has about faded out.

Today unions are all business. Their make-up is reflected in financial statements, strike figures, economic treatises, bargaining sessions, and union-run papers and magazines. Organized labor has gone a long way in 20 years. Maybe it has gone so far that a little breather is in order.

Most unions and their officers are as honest as the day is long. But the infiltration of hoods into some unions and the dishonesty of some of labor's people have drawn attention to labor's power.

Today union monopoly transcends anything in industry. Union power to shut down an industry—or even the country—with little or no restraint, exists. It is that power to dictate terms, run rough-shod over smaller firms, and generally set national wage patterns regardless of ability to meet such terms which has run up the red flag.

This monopoly has the people, congressmen, and the workers, worried. Mixed in with this worry are such troublesome things as inflation, unusual personal power of union leaders, and a vague feeling that things aren't going right.

This Labor Day should have a message for the labor leaders who see the handwriting on the wall. When the East and West Coast can be tied up; when the steel industry can be closed down for weeks on end; when the copper industry can be brought to a standstill; when Congress is threatened—then trouble is brewing.

Sooner or later the people of this nation are going to say "This has gone far enough." When they say that, their representatives in Washington will listen.

The message then for organized labor is:

"Stop and think—hard!"

Tom Campbell

Editor-in-Chief

Building Today, with an Eye to Tomorrow



MEETING *of* MINDS!

Each of these men has an expert mind in his field—administrative, sales, finance, raw materials, production. Each contributes years of practical experience, rigorous theoretical knowledge and proven executive ability. Together they constitute Inland Steel Company's Products and Facilities Planning Committee—keeping a watchful eye on consumer and industrial trends and requirements, guiding the company's development and expansion.

To their attention are brought market studies, design forecasts, new product possibilities, material resource potentials, new production methods, future equipment needs. They are excellent listeners, they travel often to see for themselves, and they are doers—initiating programs which have upped Inland's steelmaking capacity 15% to 6,500,000 ingot tons in just three short years.

The work of this committee, like the future of America's expanding economy, is never ending. Keeping pace with midwest industrial growth, Inland completes each stage in its expansion plan and looks ahead . . . for the next job.



INLAND STEEL COMPANY

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Kansas City • Milwaukee • New York • St. Louis • St. Paul

Other Members of the Inland Family

JOSEPH T. RYERSON & SON, INC.
INLAND STEEL PRODUCTS COMPANY
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INLAND LIME & STONE COMPANY* •Division

Source of Electricity

From England comes a device to make electricity simply by reversing the chemical process of storage batteries. Instead of splitting water into hydrogen and oxygen, the new cell combines the two, yielding water as an exhaust product. Inventor Thomas Bacon cites one future use for the energy: a substitute for oil and coal as a transportation fuel.

Ore Deposits in Brazil

Brazilian ore fines, in surface deposits and iron concentrations of 69-plus pct iron, are about ready for development. Economic studies are reported complete, and a sintering setup will probably be the next move. This could influence ore development in our own Northwest, where iron deposits of high iron content occur in similar deposits.

Exports on the Upswing

U. S. exports are on the rise again. In the past 12 months they dipped from \$19.5 billion to \$16 billion. But the trend is now up, due partly to business optimism abroad and partly to the cancellation of foreign quotas that discriminate against U. S. goods. Despite our higher prices, many foreign buyers prefer U. S. quality when it comes right down to buying.

More Continuous Casting

At least one automobile company is considering continuous casting of steel. The setup would involve two electric furnaces and a four-strand continuous casting machine. Product would be in 4-in. square billets for crankshaft forgings.

Extensometer Arms

Boeing research engineers have developed a new method of attaching extensometer arms to test specimens for protracted elevated-temperature tensile tests. Steel balls, 3/32-in., are welded to the specimens under controlled conditions. It

permits an accurate recording of strain, based on the tension in the specimen. In 93 pct of tests at elevated temperatures and 99.5 pct of tests at room temperatures, results with alloys were excellent.

From Oxides to Crystals

A new technique transforms ferric and other oxides into near-perfect, yet valuable crystals of the monocrystalline-ferrite type. Radio energy charges a metal loop and heats the powdered oxide mixture. The materials are then sifted via a glass tube through the loop. The crystal forms on cooling. In some circles, it's felt that the product is as important as the transistor.

Defense Spending Policy

Tightening up of defense spending is in store. Final okay on most major programs must now come from the top, not just from the Army, Navy, or Air Force. Policy answers Congressional criticism that the three services go their separate ways in procurement matters, resulting in duplication and in some not-so-urgent projects.

Expands Chromium Markets

High-purity chromium is now available from Union Carbide Metals in semi-commercial quantities at considerably less than the price of iodide chromium. First introduced during 1958 to meet the requirements of nuclear energy development and high-temperature alloy research, high-purity chromium is now being offered with a total impurity level as low as 300 ppm.

New Tires on Small Cars

The 13-in. tires on forthcoming Big Three small cars will differ from those on foreign cars. U. S. versions will be lower in cross section for improved stability and handling. A five-ribbed, heavy-bladed tread pattern will produce at least 15 pct more mileage. The American tires are reportedly better suited for weight distribution and suspension systems of the newest U. S.-made cars.



Another Tinnerman Original...

Cost-cutting Tubular **SPEED CLIP**[®] takes positive "bite" to hold assemblies tight!

In seconds, you can front-mount trim, name plates, grilles, knobs, insulation, with Tubular SPEED CLIPS. And at interesting savings in assembly time and costs!

Snap these quality spring-steel fasteners into holes in metal, plastic or wood. Then press the mounting studs, nails or rivets into the clips to complete the attachments...anywhere along your assembly line.

As the SPEED CLIP is inserted, spring fingers compress, then expand behind the panel to lock tight. The rolled-in end permits easy entrance, but bites hard into the stud to prevent back-off or vibration-loosening.

Tubular SPEED CLIPS are available for a full range of stud sizes and panel thicknesses. Permanent lock or removable types.

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TINNERMAN PRODUCTS, INC.
Dept. 12 • P. O. Box 6688 • Cleveland 1, Ohio

TINNERMAN

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CANADA: Dominion Fasteners Ltd., Hamilton, Ontario. GREAT BRITAIN: Simmonds Aerocessories Ltd., Treforest, Wales. FRANCE: Simmonds S.A., 3 rue Salomon de Rothschild, Suresnes (Seine). GERMANY: Mecano-Bundy GmbH, Heidelberg.

LETTERS FROM READERS

Lube Dollar

Sir—Will you kindly send me a reprint of "How to Get More for Your Metalworking Dollar—Lubrication" which appeared in the August 20 issue.

This article is an excellent course in the fundamentals of maintenance lubrication and should be useful to any one concerned with this subject.—T. B. Rees, Mgr.—Plant Purchases, The M. W. Kellogg Co., Jersey City, N. J.

Sir—Would you supply the writer with three copies of this feature article.—T. M. Bell, Works Mgr., Burlington Steel Co., Ltd., Hamilton, Can.

Sir—Please send me six reprints of this article.—F. J. Cunnane, Vice Pres. and Plant Mgr., Bridgeport Brass Co., Bridgeport, Conn.

Sir—I would appreciate three copies.—F. Q. Jones, Sales Engr., The William B. Pollock Co., Youngstown, O.

■ In all cases, reprints have been sent.—Ed.



"Safety on the job is admirable, Bender, but let's not overdo it."

THE IRON AGE, September 3, 1959

Profits and Prices

Sir—Your editorial regarding the advisability of companies making healthy profits (Substantial Profits: Something To Be Proud Of) brought to mind this little quote which is a favorite of mine.

The Socialists—both the witting and the unwitting variety—continue in their dream world belief that somehow all industrial direction could be performed by a government without the need for a profit. Actually, many studies made by such men as Peter Drucker conclude that if the truth were known, the state-owned plants in Russia actually have to operate at a higher profit level than those in our own capitalistic America to overcome the many built-in inefficiencies which they have.

I would put the thought that the

Government does not have to make a profit in the same category with the very prevalent idea that somehow if the Government foots the bill, it doesn't cost us anything.

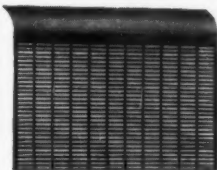
There are some recent arguments that a steel price cut will cause hardship on warehouses and others with large stocks on hand. I fail to see where this is valid. These fluctuations are taking place in the copper and brass market all the time.

While no one likes to sell a higher priced inventory at a lower price, still they are just as often selling a low cost inventory at a high price. We might also remember the pattern for people with heavy stocks of steel for many years has been an unbroken chain of profits made on low cost stocks when new price increases were announced.—R. D. Oldfield, Jr., Ohio Screw Products, Inc., Elyria, O.

Perforated Metal Products and Parts



Pickling Basket



Air Inlet Screen for Oil Burner

We, of course, supply manufacturers with perforated metal sheets and plates in a wide variety of sizes and shapes, from which they produce their own products and parts, but we are also fully equipped to relieve them of a great deal of this work. We weld, spot-weld, or rivet, stiffeners and

angles to the pieces and can form or flange them to special shapes as required. The items here shown are typical of hundreds we have furnished to other manufacturers during nearly a half century of successful experience.

YOU'LL SAVE MONEY in most cases, by placing orders with us for perforated metal parts, to be delivered in lots throughout the year in accordance with your production schedules. Specialized equipment and procedures will usually enable us to do the work at lower cost than it could be done in your own shops.

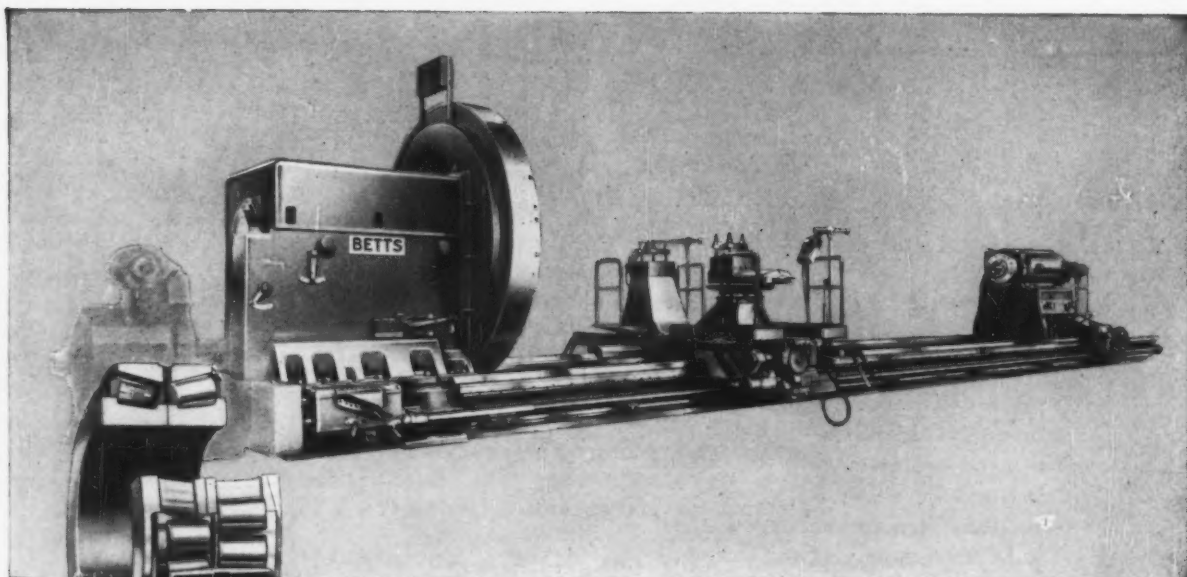
Send us your blue prints and specifications. When given sufficient information, our engineers are often able to make money-saving suggestions and always welcome an opportunity to do so.



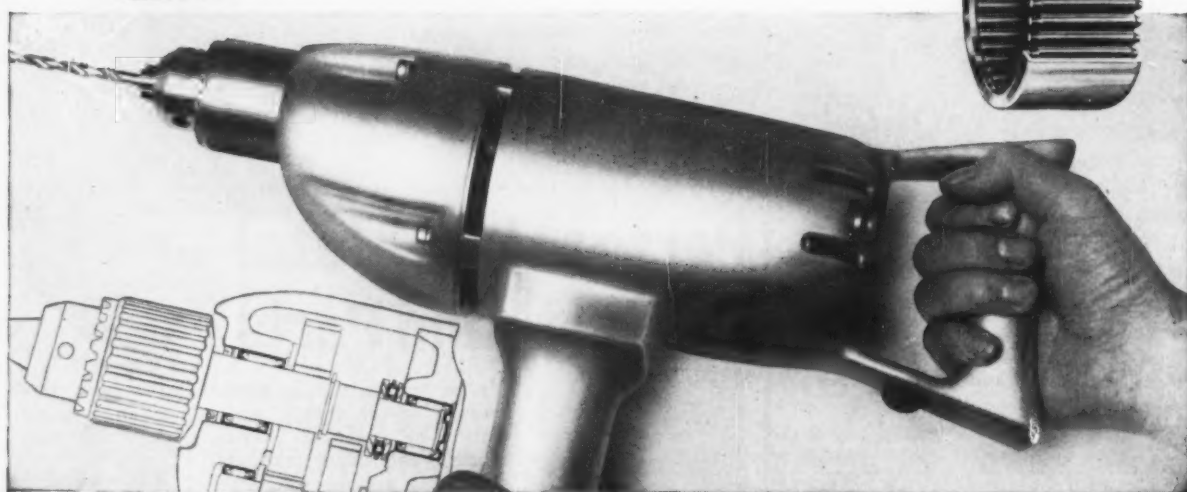
Perforated Metal, spot-welded to specially formed angles.

DIAMOND MANUFACTURING CO., WYOMING PENNA.
(Wilkes Barre Area)

New Bulletin No. 51, Describes DIAMONTEX Perforated Metal Lay-in Panels for Modern Acoustical Ceilings.



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In a huge lathe, the need may be for a five-foot diameter Torrington Tapered Roller Bearing, precise to a few ten-thousandths of an inch. In a hand drill, it may be for a compact Torrington Needle Bearing, fractions of inches in diameter for light weight and easy handling.

Whatever the requirement, large or small, special or standard, Torrington makes the right type of anti-friction bearing for your specific needs.

You can rely on the broad and diversified experience of Torrington in the design, manufacture and application of anti-friction bearings. Call on your Torrington representative for help in selecting the right anti-friction bearing for your product. **The Torrington Company, Torrington, Conn.—and South Bend 21, Ind.**

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FATIGUE CRACKS

All About Integrity

On the cover of this week's issue, and on p. 35, you will see pictures of Chevrolet's new Corvair. These pictures were taken by IRON AGE's own people and were obtained by perfectly ethical means.

We had hoped for a complete news beat, but you probably saw similar pictures (taken from a helicopter) that were circulated by a national news syndicate. They were offered to us, as a matter of fact, but we liked our own.

Added Features — This is the kind of competition that makes the news business fascinating and we have to give credit, grudgingly, to other enterprising photographers. We have no monopoly on initiative.

Furthermore, our story by H. R. Neal discloses many of the features of the new small car, tells some of the fascinating engineering background of their creation, and can stand by itself.

Broken Vows—But what we do resent are others in the news business who broke the release date on pictures that were issued to newspapers and magazines in advance of the new car introduction.

In fact, we actually refused to accept them because we decided some weeks ago to try to get our own, and didn't want to be tied to the release date.

We do our best every day to get news beats, in automotive, steel, and every branch of metalworking. But when we accept something in advance, with an understood release date, we honor it.

Nuclear Swim

How can a swimming-pool reactor aid metalworkers in this atomic age?

A look inside a unique research center gives some answers. Scientists

at University of Michigan's Phoenix program say applications of profound importance lie ahead. And who's to say where theoretical research ends and application begins?

In next week's technical feature you'll find out what industry is doing with atomic research and what it means to the future of metals.

We've only begun to explore the effects of radiation on metals. Already studies of metals, metal surfaces and finishes have been greatly advanced by radioisotopes.

Trained Followers

We get the feeling that some of these highly-touted management courses are overdoing it a little. Management "war games" and other schemes cooked up to develop leadership may be O.K.

But the new idea of schools to develop qualities of "followership" leave us entirely mixed up.

The concept was brought to light in press reports of sessions on followership and other management principles at the Personnel Psychology Services Center at the University of Houston.

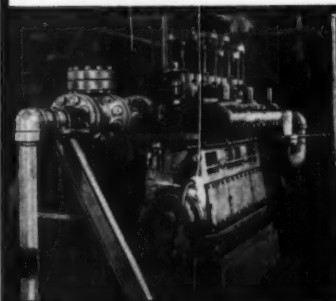
Two Views—Don't get us wrong. We believe good subordinates are necessary. But think of the other side.

Imagine an executive taking his bright young subordinate aside and approaching him something like this:

"Young man, we've got our eye on you and we're going to do something about it. We're going to send you to subordinate school. You've got the makings of a good subordinate and we're going to see that they are developed."

Somehow we can't see the bright young man, on receiving the news, looking up and saying with gratitude, "Thanks, a lot, boss. I'll see that you're not disappointed."

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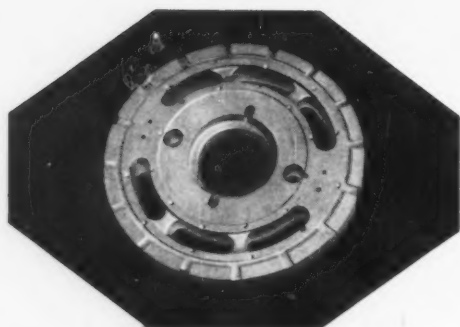
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From Aldrich you get all the benefits of unified engineering plus the newest in pumping equipment. Aldrich Direct Flow Pumps to 2500 hp. Aldrich-Groff Controllable Capacity pumps to 125 hp. Pressures to meet your requirements. Write for data.

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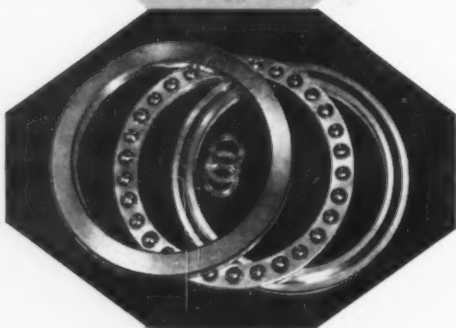


**Aldrich Pump Company
8 Pine Street, Allentown, Pa.**



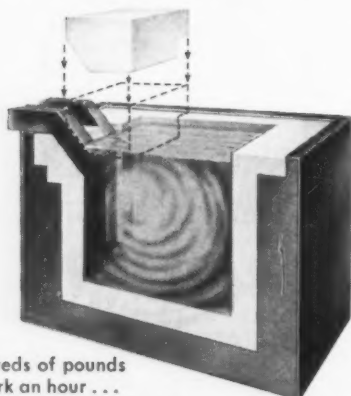
**Martempering tamed this
heat treater's "nightmare"!**

This Vasco B. B. steel valve plate is 11 1/2" in diameter and varies in section from 1/2" to 1 1/2". Ajax austenitizing and martempering followed by air cool and draw hardens it to Rc 63-64 on the lighter sections and to Rc 60-64 on the 1 1/2" section — without cracking, distortion or surface defects.



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... without distortion.**

Freedom from distortion and extreme surface hardness are essential to these 52100 steel bearing races. Ajax austenitizing with Ajax cataract quenching plus air cool and draw supply these characteristics in full measure—on a fast production basis.



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of work an hour ...
from a furnace no larger
than your desk!

When it comes to hardening high alloy steels ...

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In hundreds of applications throughout industry, Ajax neutral hardening salt baths are providing far and away the fastest, most economical means of heat treating valuable high alloy steel materials.

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- Negligible distortion inherent in the salt bath method means virtual elimination of rejects and decreased finish-machining costs.
- Built-in surface protection guards against scaling, decarb and pitting.
- Unsurpassed hardening uniformity is assured by accurate temperatures that do not vary more than a small fraction of 1% in any part of the bath.

In addition, Ajax salt baths use minimum floor space, are readily adaptable to mechanization and require little maintenance. For instance, the new Ajax Type R removable submerged electrodes can easily be changed in an hour or two per pair — by your regular maintenance men — without tearing down pot or furnace walls.

Actual heat treating results on your own parts, under typical conditions, will be gladly demonstrated in the Ajax Metallurgical Service Laboratories. *You try before you buy!*

Write for Ajax 70-page catalog; also documented Neutral Hardening case histories.

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SALT BATH FURNACES

Internally heated electric and gas-fired types

SEE AJAX CATARACT QUENCH ON CLOSED CIRCUIT TV, BOOTH 1526, METAL SHOW

THE IRON AGE, September 3, 1959

COMING EXHIBITS

Instrumentation Show—Sept. 21-25, International Amphitheatre, Chicago. (Instrument Society of America, 313 Sixth Ave., Pittsburgh 22.)

Metal Show—Nov. 2-6, International Amphitheatre, Chicago. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

MEETINGS

SEPTEMBER

Pressed Metal Institute—Annual meeting, Sept. 13-17, Estes Park, Colorado. Institute headquarters, 3673 Lee Rd., Cleveland.

American Mining Congress—Metal mining-industrial minerals convention, Sept. 14-17, Denver, Colorado. Congress headquarters, 1200 18th St., N. W., Washington, D. C.

American Die Casting Institute—Annual meeting, Sept. 15-18, Edgewater Beach Hotel, Chicago. Institute headquarters, 366 Madison Ave., New York.

National Petroleum Assn.—Annual meeting, Sept. 16-18, Traymore Hotel, Atlantic City, N. J. Association headquarters, Munsey Bldg., Rm. 958, Washington 4, D. C.

Steel Founders' Society of America—Fall meeting, Sept. 21-22, The Homestead, Hot Springs, Va. Society headquarters, 606 Terminal Tower, Cleveland.

Electronic Industries Assn.—Quarterly meeting, Sept. 22-24, Plaza Hotel, New York. Association headquarters, 1721 DeSales St., N. W., Washington 6, D. C.

Porcelain Enamel Institute, Inc.—Annual meeting, Sept. 24-26, The Greenbrier, White Sulphur Springs, W. Va. Institute headquarters, 1145 19th St., N. W., Washington 4, D. C.

Association of Iron & Steel Engineers—Convention, Sept. 28-Oct. 1, Sherman Hotel, Chicago. Headquarters, 1010 Empire Bldg., Pittsburgh.

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DUPLICATE METAL TAGS ARE
EASY, FAST, ECONOMICAL
WITH THE PANNIER
SIMPLIFIED METHOD OF
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Whether you use embossed metal tags in large, production quantities—or just a few, occasional tags—Pannier simplified embossing equipment is

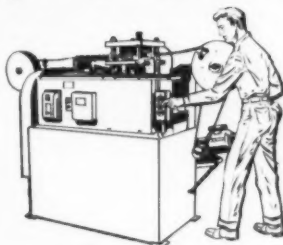
engineered to provide your metal tags at the lowest possible cost, greatest safety and easiest readability. Inexperienced help can operate any of the machines, large or small.



One to four tags at a time (model 344)

Model 344 Pannier Embossing Machine has two uses. It can emboss up to 4 duplicate tags, like that pictured above, in sizes up to 3" x 5 1/2" or longer, at one operation (one letter at a time).

This same machine provides the low cost, matched male and female embossing matrices (shown at left) for use with Model 207. Paired, these two machines provide complete equipment for volume tag production.



Volume Tag Production (No. 207)

The Pannier Master Marker Embossing Machine, Model No. 207-H-6 automatically produces up to 60 duplicate tags per minute, employing coils of Pannier Safety Tag stock. These tags, in strip form, are nicked and notched for easy detachment from the coiled strip. Embossing impression is made by inexpensive male and female metal matrices—that cost only a fraction of type-and-matrix methods. The machine operates by start-stop pushbutton control. Fingers never approach the embossing area.



For single, occasional tags

Pannier engineering provides a wide range of Master Marker Embossing Machines to suit any quantity requirement. This small hand-held Embosser makes individual tags on half-inch strip metals or vinyl plastic.



Pannier Embossed Tags

You can order all your tag requirements from Pannier. They're embossed for you on these same machines. Tags are low cost and delivery service is fast. They can be made to your specifications, or write for standards and price list.

Write for literature or Pannier engineering service, specifying style and quantity of tags you require.



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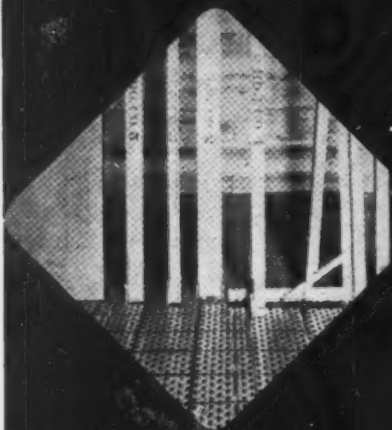
**PANNIER
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HOW TO PROFIT FROM PERFORATIONS

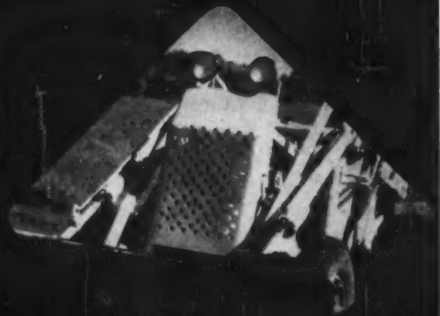
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metal
products*



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transportation
equipment*



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machinery*



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Hundreds of design applications for Hendrick perforated metals are waiting for *you* to help discover them. When you do, you'll find you can use Hendrick perforated metals for both ornamental and functional purposes—and they'll often cost less to install and last longer than many comparable materials.

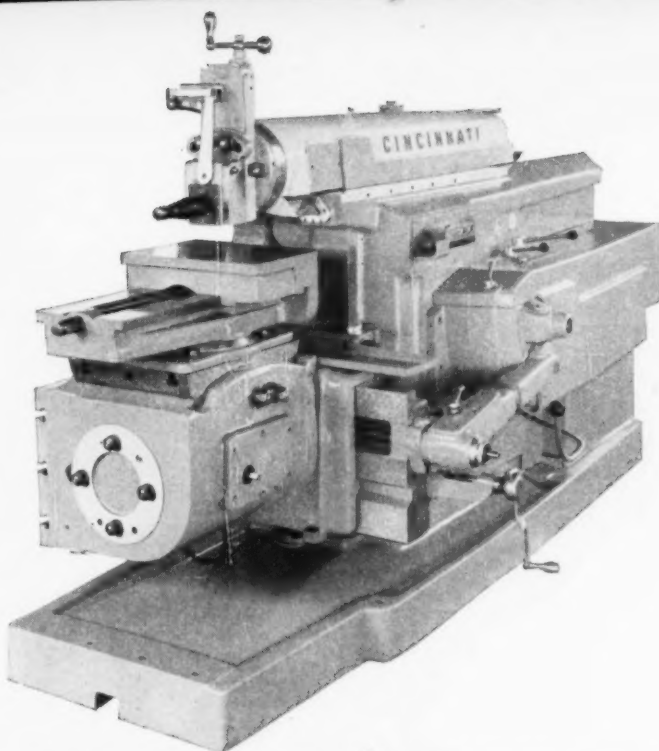
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Cincinnati Shapers give you so many money-saving features per dollar invested that they can be the most profitable equipment in your shop.

1. This 2" cut, .030" feed on a 24" H. D. Cincinnati® Rigid Shaper, demonstrates the ability of the 50 psi automatic lubrication system to maintain oil films under heavy leads.

2. Brushless electromagnetic brake and clutch insure fast, easy operation. No adjustment is required.

3. Both vertical and horizontal rapid traverse are standard Cincinnati features which substantially reduce setup and cutting time.

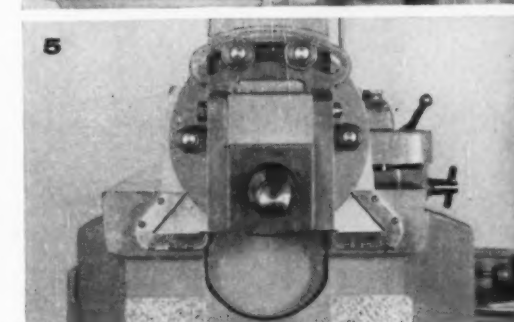
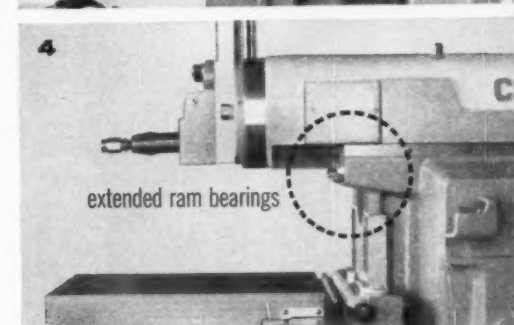
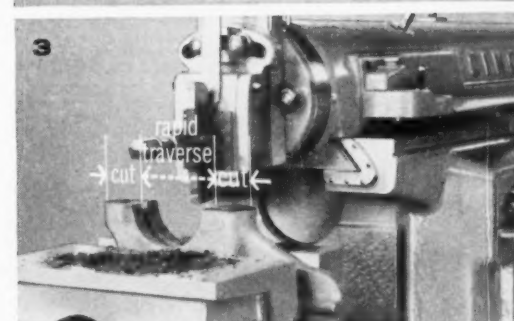
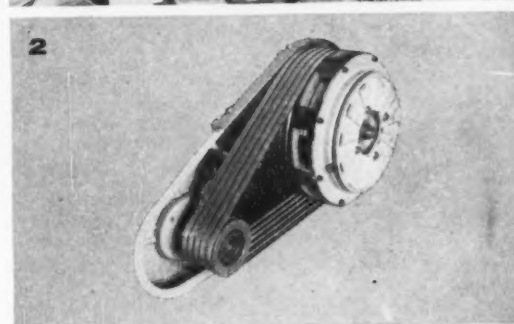
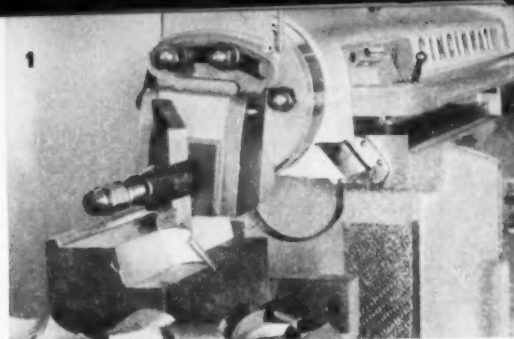
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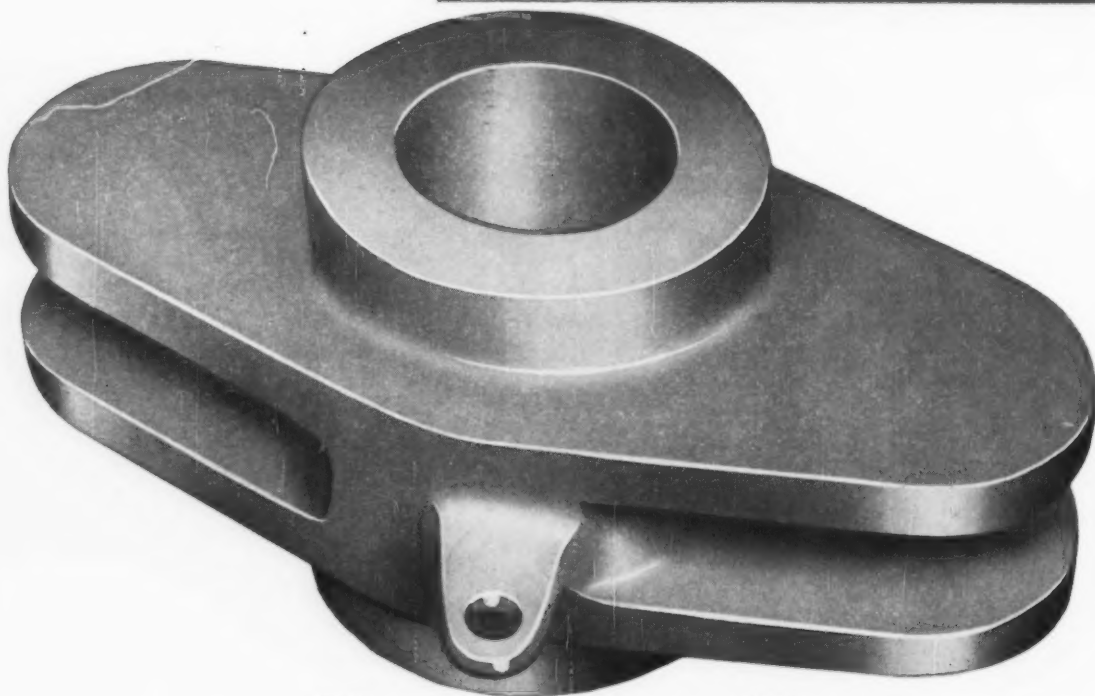
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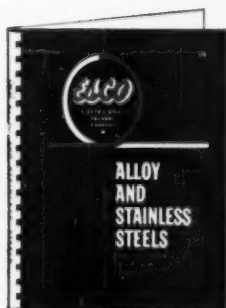
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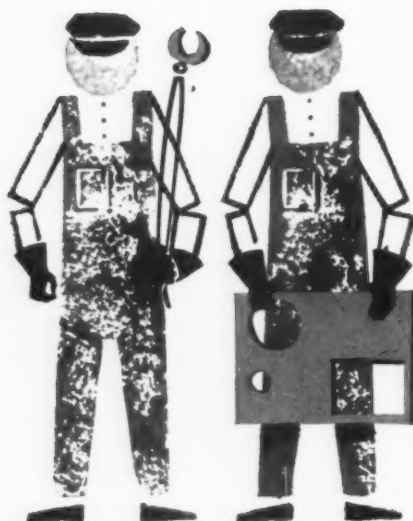
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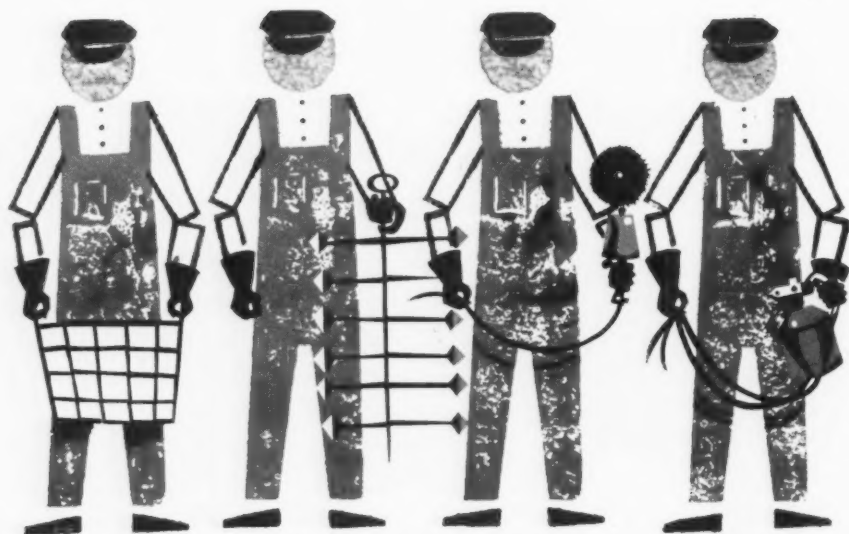
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Everything's done on virtually one continuous assembly line—from die casting or metal stamping to the gleaming finished part.

Every process is under one roof: Extensive facilities for precision die casting parts of any shape and sizes up to six feet in length . . . an array of presses for stamping parts of any metal . . . complete facilities for rolled sections . . . and efficient assembly line

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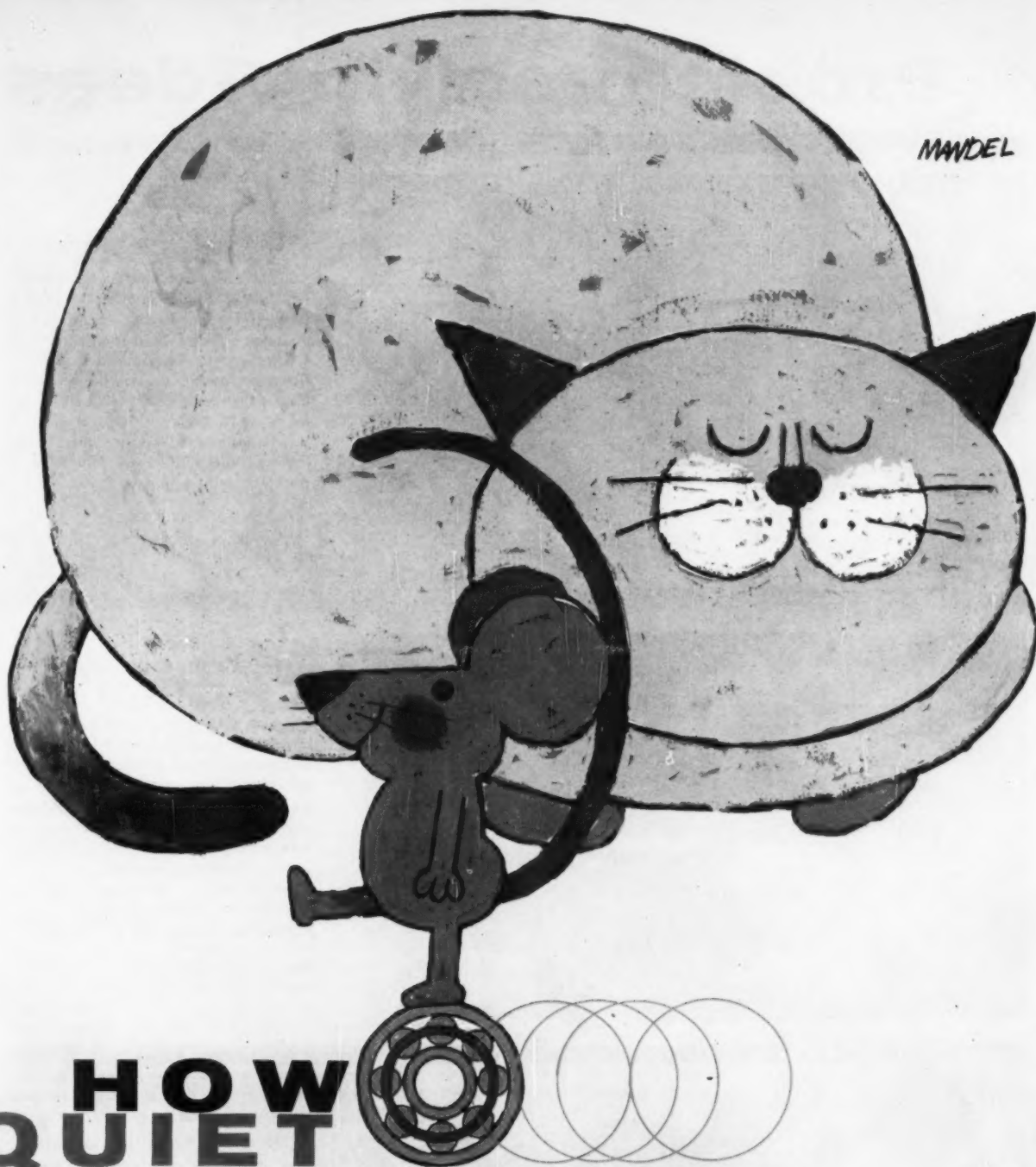
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DIVISION OF GENERAL MOTORS CORPORATION



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Federal Ball Bearings are to be seen, but not heard! Elusive noises are intercepted by inspection engineers at "quiet control" points all along our production line. They want to hear the soft, sweet purr that signifies a perfect bearing, because that's the only kind we'll tolerate. That's why every bearing goes through

scores of quality control tests before we send it out. Customers who get these perfect bearings number among the most respected names in American industry. We'd like to include you. Start with our catalog—over 12,000 ball bearing sizes, hundreds of types. Send for it today.

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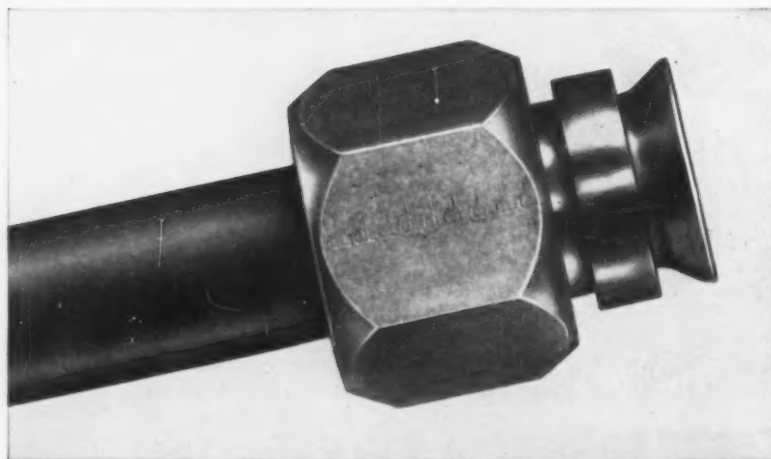
Problem-solving ideas



ACCURATE, EASY FORMING... is yours with Republic Manufacturer's Coarse Wire in types and gages to meet almost any requirement. Illustrated are concrete reinforcing specialties fabricated by Superior Concrete Accessories, Inc., Franklin Park, Illinois. Uniform quality of Republic Steel Wire assures accurate, easy forming with adequate strength and toughness to meet the most difficult design and forming problems. Mail coupon for data.



UNIQUE TITANIUM SPEED BRAKE... brings Republic Aviation's F-105 fighter-bomber from Mach 2 to subsonic speeds quickly and with no appreciable loss of stability. Working closely with design engineers, Republic Steel supplied titanium products for the 360-degree speed brake. Hot formed, the titanium "petals" withstand searing 700-degree temperatures and the 90,000 psi impact accompanying brake extension at Mach 2.



YOU GET MORE TUBE PER DOLLAR... with Republic ELECTRUNITE® Hydraulic Fluid Line Tubing. Produced in all sizes shown in the JIC Standards Book. Available in an even wider range of sizes produced to our specification HL-1 (which meets all test requirements of the JIC Standard). Utmost uniformity assures better bending and flaring characteristics, appreciable savings in downtime. Send for complete ELECTRUNITE information, including a copy of specifications.

from Republic Steel...



Shown is the Baldwin-Lima-Hamilton model 2400 excavator being used as a drag line. Built by the Construction Equipment Division, Lima, Ohio, this heavy-duty excavator uses alloy steel in the vertical swing shaft (right), to assure maximum dependability under toughest conditions and work schedules.

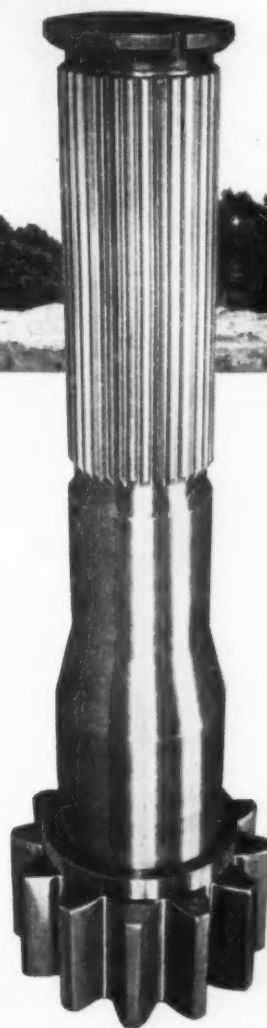
ALLOY STEEL SWING SHAFT WITHSTANDS SEVERE STRAIN AND SHOCK

Baldwin-Lima-Hamilton excavators and cranes offer users the latest engineering and design advances. An outstanding example is the vertical swing shaft on the line's 6-cubic yard model shovels and 7-cubic yard draglines. Subject to severe strain and impact, the shaft is made from Type 4340 hot-rolled alloy steel, of which Republic is a major supplier.

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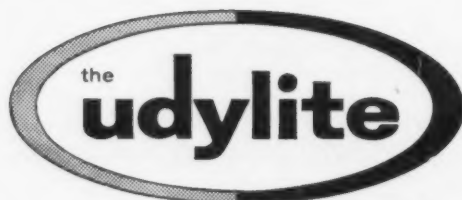
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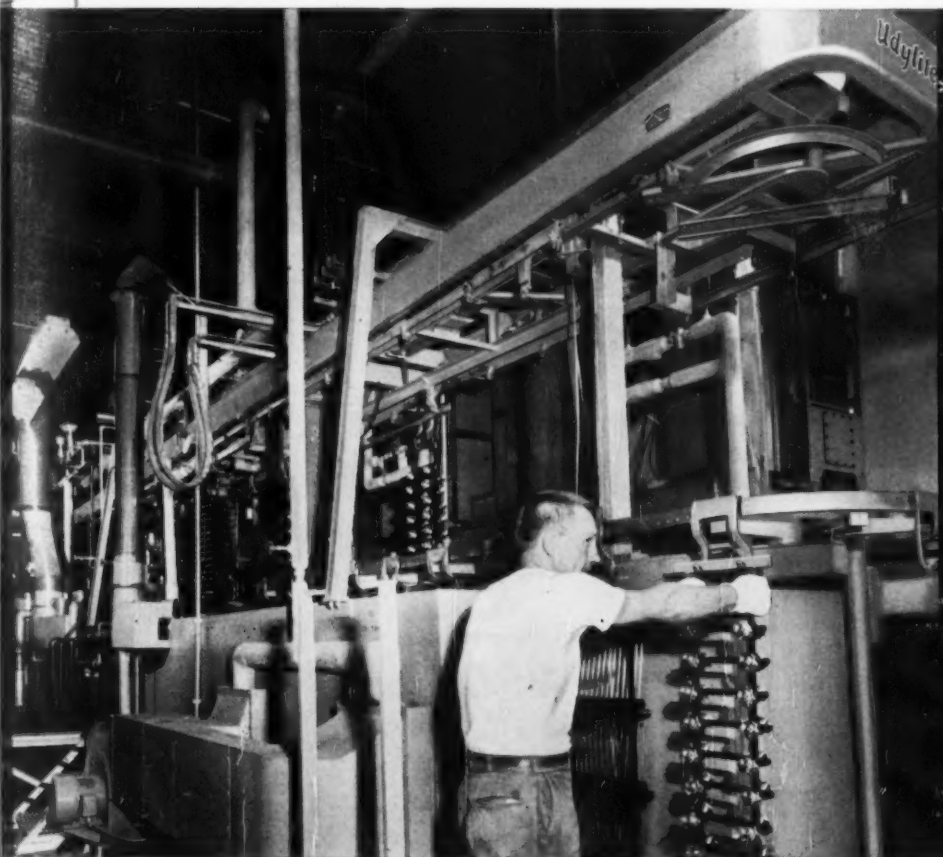
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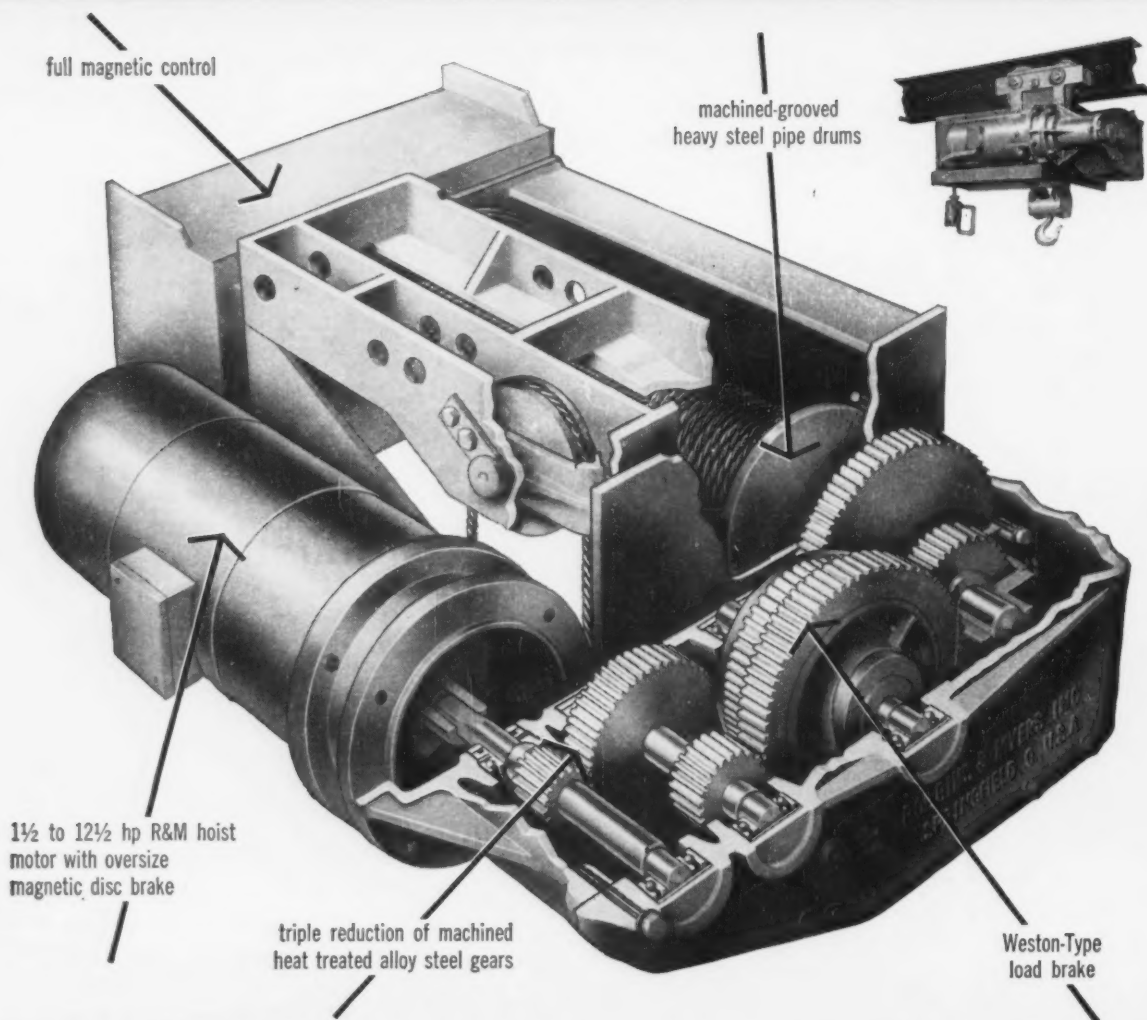
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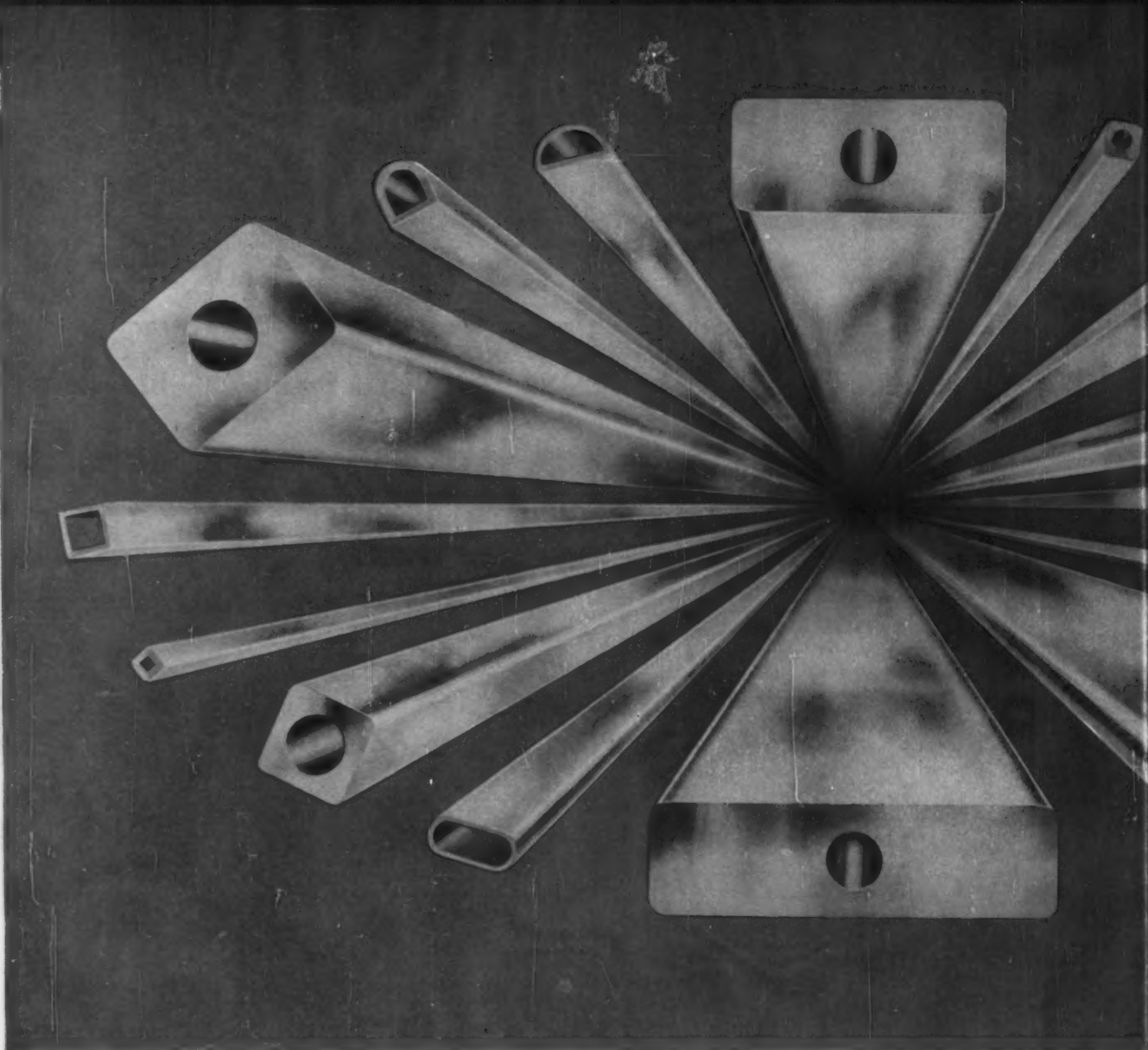
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THE SHAPE OF THINGS TO COME WITH ANACONDA

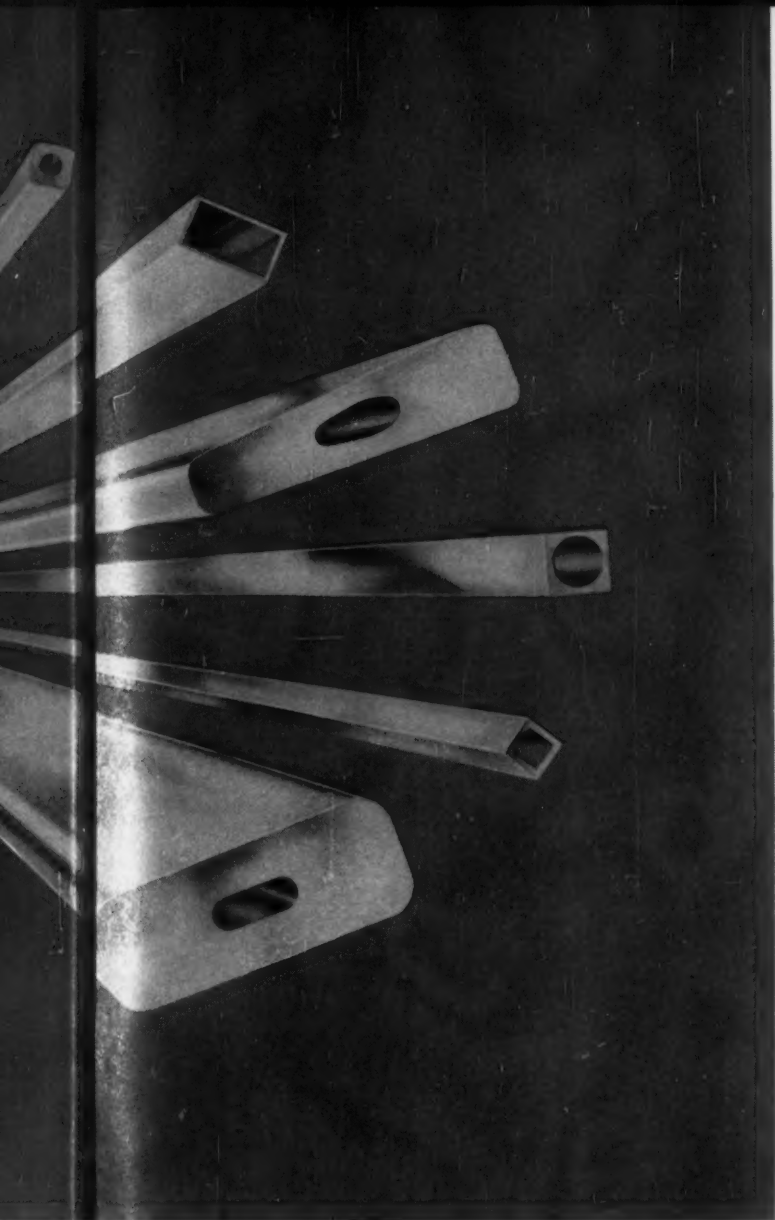
Fluid-cooled copper conductors. The growing need for compact electrical assemblies which can handle high current densities is leading to an ever-increasing variety of hollow, fluid-cooled copper conductors. The samples shown full size above give some idea of the range of sizes and shapes produced by The American Brass Company.

Nuclear physics magnets are, perhaps, the most spectacular applications of fluid-cooled conductors. These hollow conductors range from tube .182" square O.D. x .083" square I.D. to heavy rectangular bars with a round core for water cooling.

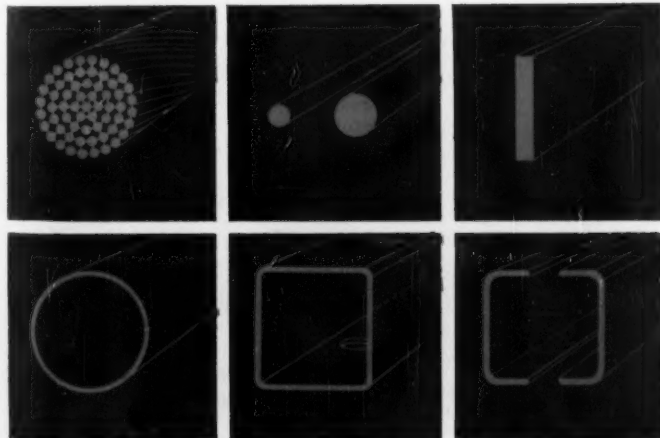
Industrial applications. The use of fluid-cooled conductors is growing rapidly in large electrical equipment. Generator output can be greatly increased, without increasing frame size, by cooling stator and

rotor bars. Fluid-cooled conductors are being used in heat sinks for rectifiers and induction furnace coils. Another interesting use is in compact water-cooled windings needed to provide very high flux densities in, for example, the ceramic magnet manufacturing process. These "solenoids" are being built for applications in which the current range is from a few hundred to about 2000 amperes.

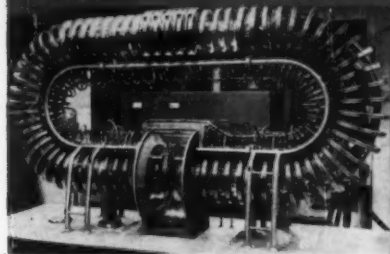
Technical assistance. Whatever your problem—liquid-cooled field coils, rotor bars or a special-shape tubular conductor—technical specialists at The American Brass Company can help you work out the size and shape best adapted to your needs. See your American Brass representative or write: The American Brass Company, Waterbury 20, Conn. In Canada write: Anaconda American Brass Ltd., New Toronto, Ont. 2042



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Standard Anaconda copper bus conductor shapes.

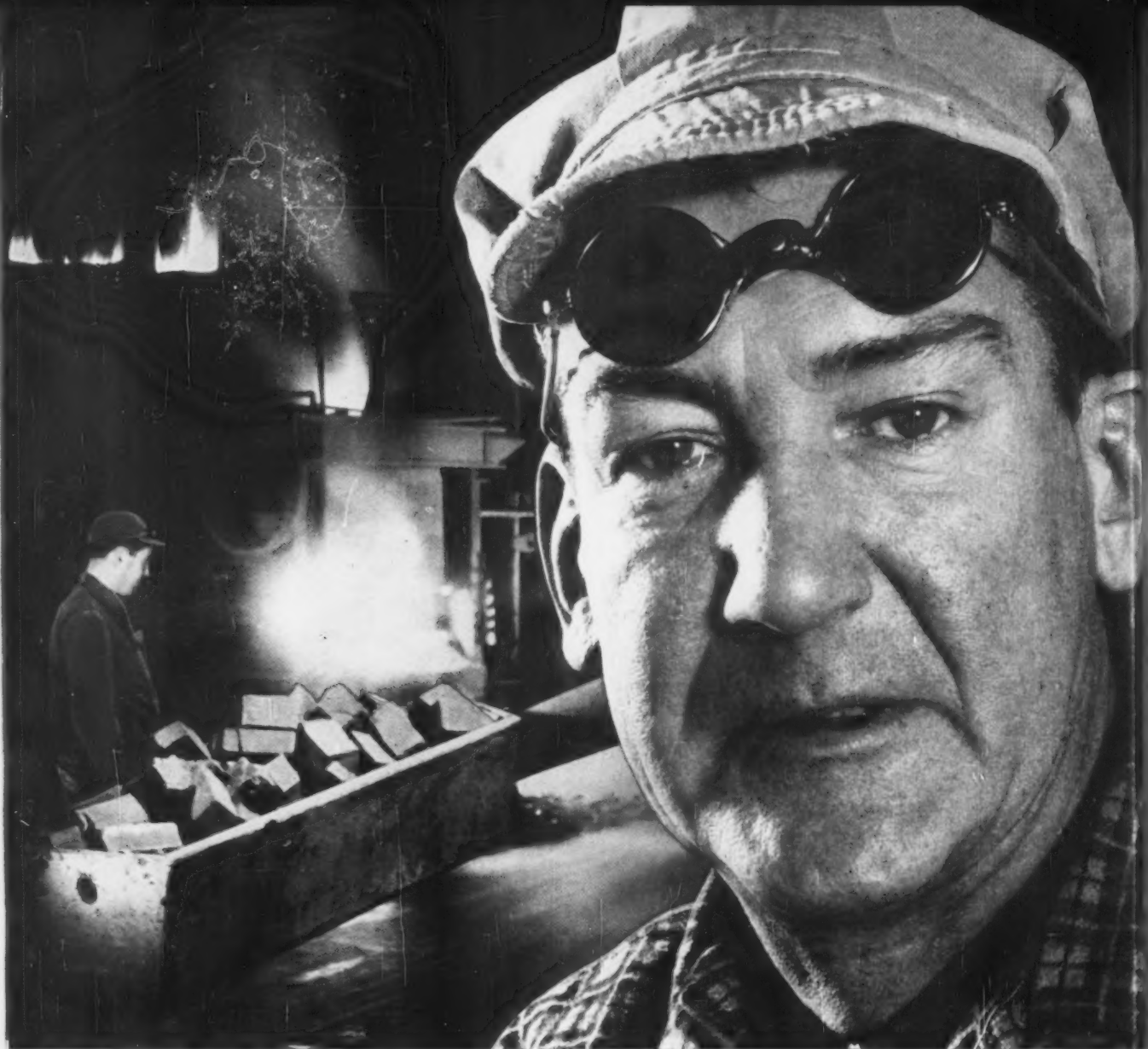


200,000 KW AT 750 VOLTS is maximum peak rating of twelve d-c generators providing power for the confining field coils in C Stellarator being built in the new fusion research facility at Princeton University. This power is needed to establish the maximum 50,000-gauss magnetic field, forming the walls around the reaction aimed at reaching 100 million degrees. A.E.C. demonstration model above shows one form of the Stellarator tube that has been considered. The big copper bus (top), 9 square inches in section and silver plated, will carry the tremendous power from the generators to the coils around the Stellarator tube. The American Brass Company has furnished the mile of bus required for the job to specifications of the Allis-Chalmers Manufacturing Co., Milwaukee, Wisc., which is assisting in the design and building of the C Stellarator.

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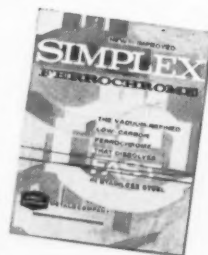
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STEEL IMPORTS HAVE GAINED MORE than a foothold in U. S. markets. But no great runaway of import tonnage is likely now. The strike has increased interest in foreign steel, but most of the current deliveries were ordered months ago. Most users are not likely to tamper with their established sources of supply.

WITH ALL EYES ON NEW AUTO MODELS, sales of 1959's are still going well. New car sales this year are running three months ahead of the 1958 rate. Deliveries reached 4 million the last week in August and total 1959 sales are still estimated to reach about 6 million.

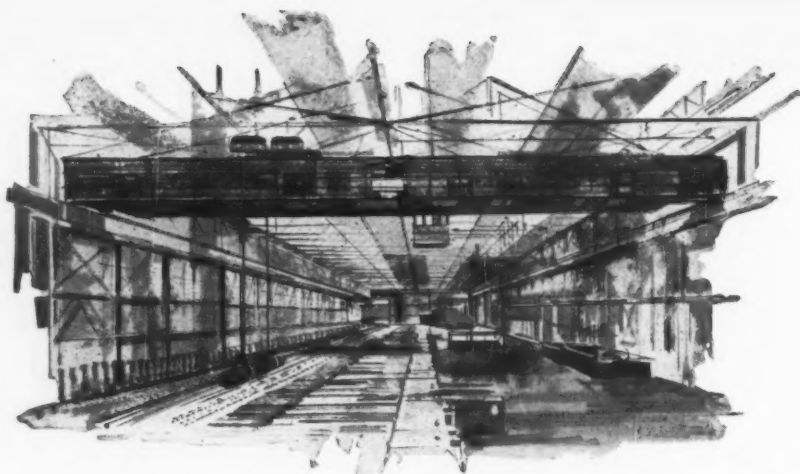
TWO FACTORS THAT COULD AFFECT SALES of new cars during the remainder of this year: The new light cars, on the positive side, and the steel strike, on the negative. Despite early talk of months and months of steel inventory, automakers now admit they will be in trouble by early October.

THE NEW SMALL CARS MAY TAKE HOLD and lift sales strongly in the final months of the year. Their new concepts and innovations have stirred up the most interest in years in new car introductions and the automakers should be able to sell all they can produce, at least in the first few months after introduction.

THERE IS MORE TO THE RECORD SHIPMENTS of stainless steel this year than shows up in total figures. For one thing, shipments to the auto industry this year were up 169 pct during the first six months, compared with 1958. Obviously, improved auto production and strike hedging didn't account for all of that. It reflects greatly increased use of stainless for both trim and functional parts in this year's models.

STOCKS IN STEEL WAREHOUSES ARE being reduced at an accelerating rate. Since Aug. 1, steel service center supplies had been dropping at the rate of about 150,000 tons a week. But the rate increased significantly in the week ending Aug. 22 when stocks were depleted at the rate of 175,000 tons. Total steel warehouse inventory now stands at about 3,125,000 tons.

CONSTRUCTION CONTRACTS ROSE to an all-time high for the month this July, according to F. W. Dodge Corp., construction statistical specialists. Significant gains were in single family houses, backed up by increases in all non-residential building types.



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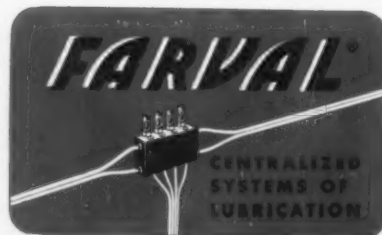


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New Small Cars: How They Look; How They Run; How They Grew

Auto engineers threw precedent out the window in designing the new light cars.

Rear engine, aluminum engine, canted engine are just a few of the variations found in the three new models.—By H. R. Neal.

■ First of the Big Three's new small cars won't be out until late this month. But production lines are rolling already.

Probably because it's difficult to conceal anything as big as a car, and with as much interest attached to them as new cars have, the new small cars are the worst-kept secret since the Edsel.

Not Well Hidden—It was no insurmountable job to get pictures of the Chevrolet Corvair lined up outside the Willow Run assembly plant. (See cover.) It was more difficult, but still possible, to obtain a view of the Corvair on GM's highly-protected proving ground. (Right.)

Furthermore, trailers loaded with the lightly protected Corvairs could be followed easily along the back roads from Willow Run to the proving ground at Milford, where thousands are stored for shipment later to dealers.

Auto Revolution—But the new small cars are more than just another automobile added to the companies' lines. They represent an entirely new pattern of thinking for the Big Three—an overruling of Detroit's traditionalists who have maintained with conviction that if it's bigger or more powerful, it's bound to be better.

The cars aren't radically different

—only by Big Three standards. A Chevy engineer admits even the rear-engine Corvair doesn't have anything "we couldn't have done 20 years ago," (but didn't.)

Fresh Start—However, a Ford small-car engineer claims: "Only

two or three of our vehicles in the past 20 or more years have started on a clean sheet of paper. Everything else started with the idea we'd use some components from other vehicles." He could name only two clean-paper starts — Falcon and

Corvairs Head for Secret Storage



... But Sharp Eyes Catch Test Run



"Only two or three of our vehicles in the past 20 or more years have started on a clean sheet of paper."

—Ford Motor Co. small-car engineer.

MUTT (a new light-weight military vehicle.)

Each of the automakers ended up with a slightly different small-car, but in roughly the same size package. Of course, they may have had some help in arriving at the size from a vigorous competitor already entrenched in that area. (See Automotive p. 53)

Size Figures—Corvair has a wheelbase of 108 in. and an overall length of 180 in. It is 52 in. high and 70 in. wide. By way of contrast, the 1959 Chevrolet has a 119 in. wheelbase and an overall length of 211 in. It is 58 in. high and 80 in. wide.

Corvair styling is characterized by the flat lines of its roof, hood and rear deck—all with an eye toward getting the most space from the package.

Rear Engine Facts—Rear engine cars must, of necessity, have the luggage compartment located at the front—where wheelhousings cut down on available space. But Chevy also utilizes the space between the engine and rear seat. A fold-down rear seat will be offered as an option, turning the area from the firewall to the back of the front seat into cargo space—giving some of the versatility of a station wagon.

Putting the engine in the rear of the Corvair is one of the most daring and controversial moves to be made by a U. S. automaker in years. From all reports, there is little that is especially new about the engine design, except to Detroit tradition.

Aluminum Block—It's an air-cooled, six-cylinder pancake engine with a 121 cu. in. displacement and is rated at about 90 hp. However, the extensive use of aluminum for

the engine block and other power unit components is a big departure from accepted practices for volume-produced engines. The entire power unit is said to weigh only 400 lb, and total car weight is only about 2250 lb.

Ford Falcon—Ford's Falcon is 181 in. long and has a 109.5 in. wheelbase. It's also slightly higher than the Corvair at 54.5 in. Width is 70 in. Styling is fairly conventional—lines are smooth and clean, and it has inherited the traditional round Ford taillights. Single headlights are set at the outer edges of the full-width grille—the only car of the new small cars to use the single headlight system.

Close cooperation between stylists and engineers early in the development program enabled the company to employ weight and cost saving designs in the car.

Economy Measures—The Falcon roof is flat, for maximum headroom in the rear. It's also designed so it doesn't need roof-bows (internal cross-braces.) Another example of saving without stinting: The inner door panel is styled to act as the garnish molding as well. Front fenders are bolted in place, which should hold down repair and replacement costs.

While extensive use is made of aluminum in the engine—an aluminum head with an integrally cast intake manifold, water pump housing, etc.—it has a gray iron block. The six-cylinder, in-line over-head valve engine has a displacement of 144 cu. in. and should be rated near 90 hp.

Foundry Techniques—Ford engineers claim that improved foundry techniques permit thinner wall sections in the block than has been

possible in the past, thus cutting weight. They say an aluminum engine of comparable size would weigh only about 50 lb less than this engine. Even so, Falcon will still only weigh about 2400 lb.

Valiant has the shortest wheelbase, 106 in., and the longest length, 184 in., of the new small cars. Its height and width are 54 in. and 70 in. respectively.

Valiant Styling—Valiant styling bears strong resemblance to some Studebakers of the past. (Chrysler styling vice president Virgil Exner was once a stylist there.) The grille is borrowed from Chrysler's 300 series of racing sedans—and is not too far removed in appearance from the grille of another small car, the Lark.

The engine for this car is nearly as interesting as the aluminum pancake found in the Corvair—it's canted 30° to the right in the engine compartment.

Engine Innovations—This permits a lower hood and keeps the center of gravity as low as possible. It also facilitates relocating the water pump from the front of the engine to the left side, shortening engine length by a few inches.

But most important, it makes room for a unique cast-aluminum intake manifold. The carburetor and air cleaner sit in the middle of the engine compartment, atop the manifold which has six long branches running to the engine.

Length of the tubes is precisely measured, making it a "tuned" manifold. This provides a "modified ram effect" which improves fuel economy and, at the same time, gives better performance in the middle speed range.

100 Mph?—Valiant's new engine is the largest in the new small cars—171 cu. in. displacement with an expected rating of 110 h.p. to 120 h.p. (An engineer claims it will do 100 mph, cruise at 80 mph all day, and still deliver 25 miles per gallon under moderate driving conditions.)

In the beginning at least, accessories will be held to a minimum.

Standards Lag Space-Age Needs

Penalty Is Measured in Millions of Dollars

New survey shows requirements of advanced space projects are seriously outdistancing American measurement capabilities.

Many new measurement quantities still lack national standards.—By G. G. Carr.

■ An error of one-millionth of an inch in the bore-hole of a gyroscope can cause a missile to miss the moon. Such an error would cause 0.03° per hour drift, throwing the missile completely off target.

In other words, horse-and-buggy measurements aren't good enough for space-age metalworking. Need for more precise measurements, more and better physical standards and better calibration throughout industry is becoming a critical technological stumbling block.

Inadequate Standards—An important new survey shows that requirements of advanced space projects are seriously outdistancing American measurement capabilities. The survey was conducted by Sperry Gyroscope Co., for Aerospace Industries Assn., in cooperation with the Air Force and the National Bureau of Standards.

Major cause of the measurement "pinch" is extremely rapid progress in space technology. There are many new measurement quantities, and conventional measurements must now be held to tolerances unheard of only a few years ago.

Tolerances are not the only problem. Ten years ago, the majority of precision measurements were dimensional. Today, 85 pct involve electronic or electrical quantities. Many of these newer quantities still lack national standards.

Cost Millions—Inadequate measurements cost money, too. A

rocket engine maker estimates savings of \$150 to \$200 million if accuracy of pressure and thrust measurements could be improved by a factor of three. Savings would come by cutting the number of solid propellant engines which must be actually fired (and destroyed) during the development phase.

Other urgent needs revealed by the survey include a standard sky brightness for "Full Daylight" for astro-tracking, a standard for million-lb-thrust for future rocket engines, and working standards for measuring radio frequency interference. Major dimensional problems are internal and external diameters, especially internal diameters below 0.250 in.

Admittedly, inadequate measurements are currently of primary concern to the relatively few companies in the most advanced fields of technology. But this will be an increasing problem to all metalworking,

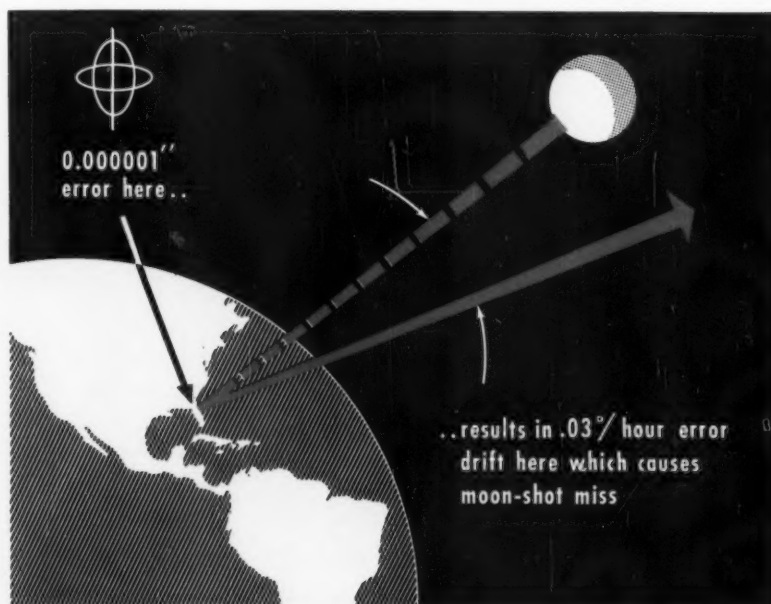
both as component suppliers and through the spread of space-age technology to general industrial and consumers goods.

Lack of Facilities—National Bureau of Standards, official custodian of measurements, is understaffed, underequipped and overworked. NBS can not supply all the standards it would like, has a backlog of needed research. Lack of regional facilities handicaps the important work of calibration.

The bureau points out that its standards should run ahead of those actually needed by industry, since there is inevitably deterioration down the calibration "ladder". But NBS is losing some of its advantage as industry constantly tightens tolerances.

Scientists, industry and the armed forces, aware of the bureau's plight, are helping to alert Congress to the danger.

Small Error, Big Miss



Will Strike Push Steel Imports?

Suppliers of foreign steel are not counting on the strike to mushroom their market.

There are many reasons why imports will have only a limited impact while the shutdown lasts.

■ Steel importers may not get a sales bonanza from the U. S. steel strike. But they have had more than a toehold in the market.

So far during the strike, foreign-made steel has increased in quantity, not in market penetration. Tonnage has arrived from abroad in a steadily rising volume since the beginning of 1959. (See chart.)

No Stampede Yet—But most of the imports came from established sources (Belgium - Luxemburg, Japan, West Germany) and were bought by customers already using the foreign product.

Until the strike cuts deeper into inventories, there will be no stampede to buy imported steel.

pede to buy imported steel.

"We haven't purchased any foreign steel," says one American consumer, "And we don't intend to, although we've been queried by foreign interests."

Another comments: "We've been approached by steel firms from West Germany and Belgium. But we've never used foreign steel and won't unless we're forced to."

Long-Range View — Established steel importers and brokers don't seem anxious—or able—to make a "killing" because of the strike. Typical is the comment of a Pittsburgh broker who says, "I haven't increased my prices since July 1. And I don't expect to increase them as steel supplies tighten. I'm looking for future business. I've never gone out after the last dollar."

There are many reasons limiting the impact of foreign steel on the current market. Large tonnages will come into the country during the

third quarter. But most of this steel was ordered before the strike began.

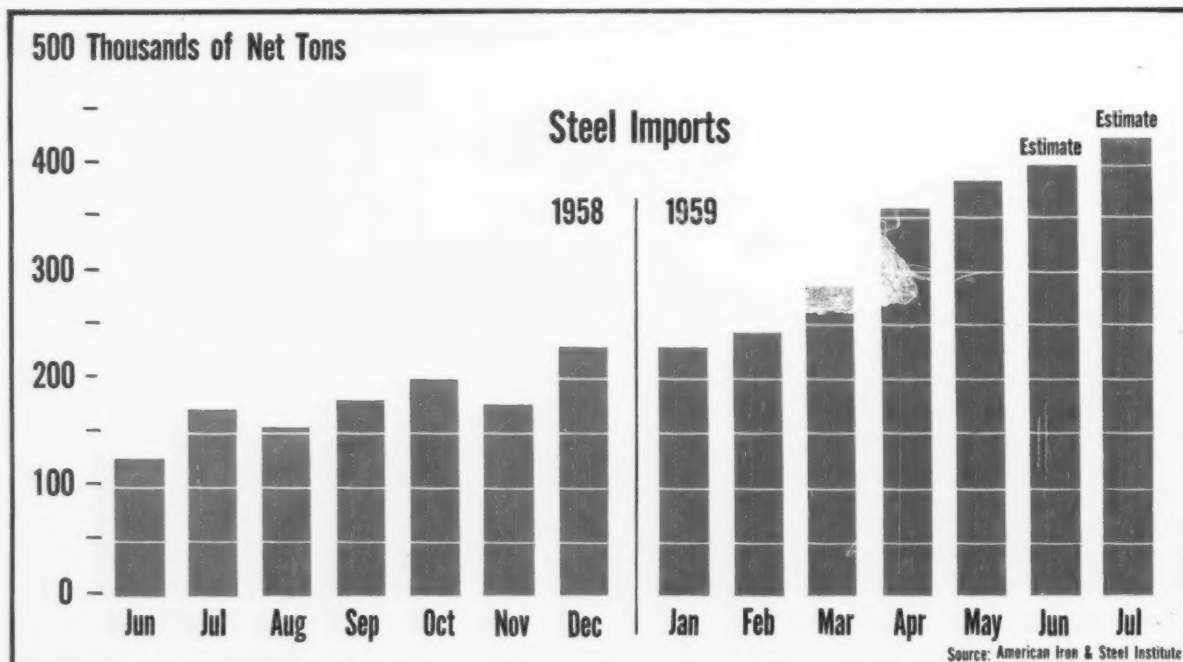
Delivery Delays — Consumers counting on help from imports when supplies run low will be disappointed.

Unless buyers can get imported steel already laid down in the U. S., they face long delivery schedules at foreign mills. Japanese rod mills are quoting December delivery to American customers. In other cases, deliveries have stretched out as far ahead as six months.

In addition there's little room for American orders on European mill books. Belgium-Luxemburg—which supplied almost 800,000 tons to the U. S. last year—did hold some mill space open against the present shutdown. But most of this has been booked.

If the U. S. steel strike lasts long enough, it could tighten the European market. One expert sums it up this way: "The strike is costing the

Three Times As Much Steel Coming In



world steel supply about 10 million tons a month. Most of this normally goes into U. S. consumption. But eventually, if the strike lasts long enough, the whole world steel supply will feel losses this large."

Future Fears—Concern about post-strike purchasing relations may keep some American users away from foreign steel. Some brokers say U. S. warehouses won't buy imported steel because of their close supply ties with domestic mills.

American producers are taking a keen interest in the buying patterns of customers who might be going "foreign" in their purchases.

Here's how one mill man puts it: "Let's take a 1000-ton-a-month customer. Up until now we've been supplying 50 pct of his needs, but suddenly he starts buying half imports. Our share of his business drops to 25 pct and other domestic suppliers are cut within this new 500 ton domestic total.

"Now suppose a tight market develops and he can't get import shipments. If he asks us to double his tonnage, he's going to be out of luck. We will continue to supply the 25 pct of his requirements. But we will not increase it at the expense of more faithful customers."

Prices Move Up—Foreign steel prices have been edging up since last spring. At present they are about in line with domestic prices. In most cases the base prices on overseas steel are higher, but extra charges are less than those of U. S. mills.

Brokers are often offering imported steel to users at slightly below the prices of American warehouses. Steel is sold to warehouses at prices near those of domestic mills.

At Cleveland more than 18,000 tons of imported steel came into the port during August. Principal products received were coiled rod and wire, reinforcing bars, wire mesh, angles, and channels. In addition, billets, sheets, plate, and pig iron came in. Even stainless strip from South Africa was shipped in.

No "Give" in Sight In Steel Impasse

Outlook is gloomy as strike goes into its eighth week of deadlock.

Neither side shows signs of giving in on the key issues of the strike.—By Tom Campbell.

■ Steel labor and management negotiators resume their deadlock this week. The outlook is gloomy. It suggests that sometime in late September the President will invoke the Taft-Hartley 80-day cooling off period.

Last week, after looking over each other's proposed revision of contract language, the summit teams decided "no go." They then established their own cooling off period which was to have ended Wednesday of this week.

Far Apart—One report from a union official ran something like this: "Hell, they couldn't even agree on the preamble." That may have been facetious, but it was a keynote of the impasse.

Everything revolves around the local practices clause of what the steel negotiators call the proposed uniform contract. Complete impasse on that clause still exists. Neither side expects at this time to budge from its position on local practices.

Won't Face Facts—Union officials still refuse to believe that the steel side will base its entire fight on a local practice clause, which regains for management its right to inaugurate more efficient operations. In interview after interview, steel leaders show no possible chance of any settlement except one on the basis that contract language changes are obtained first.

After that would come negotiating on fringe benefits in the first year and a moderate wage increase in the second year. The only thing that could throw this off would be

a "mandated" settlement by the administration. That is not likely.

Local Practices Issue—The steel side can't see why the union won't believe the steel firms means what they say. It is possible that steel negotiators could be ignorant of the union frame of mind that absolutely refuses to budge on changes in what it believes represents hard-won privileges. But this is hardly likely. R. Conrad Cooper, chief steel negotiator has had much experience with unions—and local practices clause—to sense the union opposition to any change in the disputed clause.

There is a danger that in another month or so—if the strike is on—the political aspects will come into focus. A Taft-Hartley fact finding board, while supposed to be merely informative and not capable of recommendations, could be a tool towards a settlement later in the year.

On the Hook—Such a Taft-Hartley gimmick could also take Dave McDonald off the hook with his members on work practices revision if the politicians got into that area. Then could follow a settlement on economic factors which would have to be non-inflationary—in the real sense of the word.

But that is political speculation. Before the politicians get knee-deep in this hassle (again), it should be clear that the steel industry looks on this fight as a major crusade of American industry against inflation, and as a means towards better industrial relations for everyone involved. It is that fact which always comes back to frustrate the union.

In the words of one union district official, "if what Dave tells us is true, we are back to May 5, 1959." Which is another way of saying we're back where we started from in the steel labor hassle.

Why Executives Got Salary Cuts

Recession Hurt Business and Salaries Dropped

Industrial machinery executives received biggest cuts among top men in metalworking last year. However, their salaries remained on an average with executives in other industries.

Dropoffs in profits and sales were the chief reason why top men in the industry suffered a collective 6.2 pct salary cut.

■ Industrial machinery top executives were harder hit by the recession than were almost all other industrial executives last year.

In all but the smallest firms these men took greater pay cuts than did top level men in consumer metal products and industrial metal products industries. The business decline caused 45 pct of industrial machinery firms to cut the salaries of their top men. At the same time only 28 pct gave increases and 27

pct made no changes.

Survey Findings—These findings were issued in a report prepared by Jonathan D. Lynch, of McKinsey and Co., Inc., New York consulting firm, which just completed a survey on management pay.

For survey purposes the metalworking industry was broken down into three subdivisions. They are: Industrial machinery, including makers of both heavy and light machinery, ranging from machine tools, boilers, and oil-drilling equipment to locomotives and earth-moving equipment. Consumer Metal Products, covering the manufacture of consumer products, and Industrial Metal Products, including fabricators of items designed primarily for industrial use.

Consumer Men Lead—The top man in industrial consumer products plants came out not only as the best paid among the metalworking group, but topped the list of 23

industrial groups included in the survey. Industrial metal products ranked 16th, while industrial machinery showed up 21st on the list.

However, even with their low standing in comparison to other industries both industrial metal products and industrial machinery executives were paid just about what the average top men in the industry received.

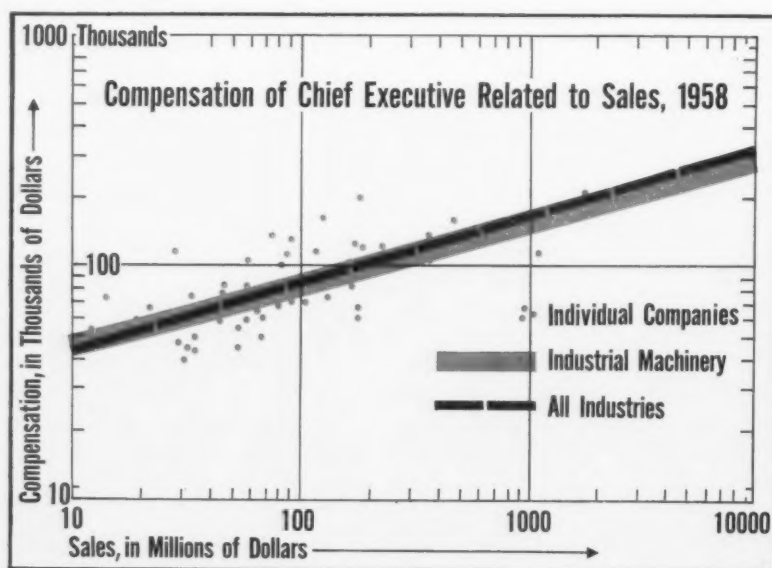
Decreases Common—Over all, metalworking chief executives took a collective pay cut of 6.2 pct, and decreases in pay were more common than increases.

The drop in sales last year was the reason for only 50 pct of the differences in compensation in the industrial machinery division. It was responsible for 73 pct of the changes in consumer metal products and 70 pct in industrial metal products. The other factors influencing changes are age, degree of ownership, and profitability.

Profits Determining Force—The drop in profits, however, had a greater force in determining salary changes. The average drop in profits for the three metalworking industries combined was 16.1 pct. This was slightly over the all industry decrease of 14.5 pct. Nevertheless, metalworking compensation was off 6.2 pct, in contrast to the 1.8 pct drop in the other groups.

Among executives in the three industries, those in consumer metal products fared worst with respect to leverage on pay. The average profit drop in this industry was only 5.4 pct, in comparison with a drop-off of 21.5 in industrial machinery, and 21.6 pct in industrial metal products. Yet the average compensation of a consumer metal products executive fell 5.8 pct while the average decrease for the other two industries was only 6.5 pct.

Machinery Meets the Average





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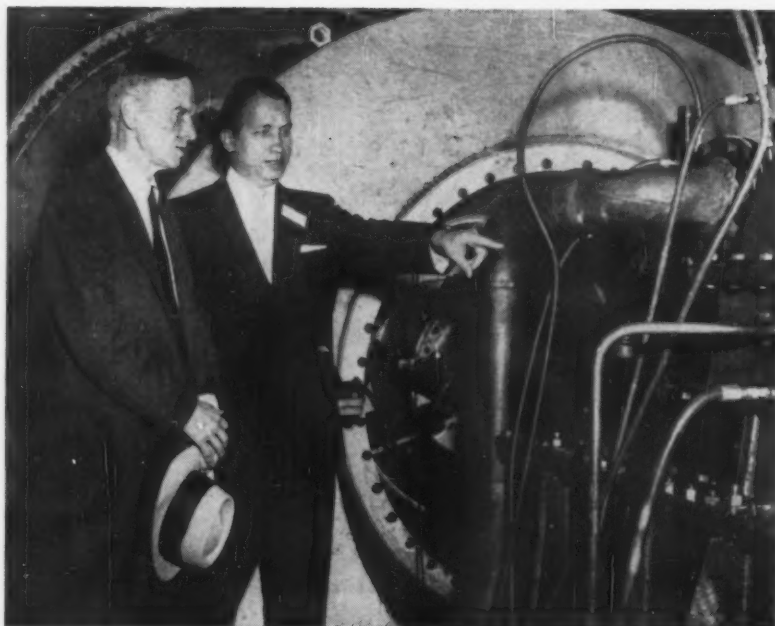
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U. S. Steel to Get Gas Turbine Air Blower



FIRST FOR STEEL INDUSTRY: S. M. Jenks (left), executive vice president-engineering and research, United States Steel Corp., and T. J. Putz, assistant manager, industrial gas turbine department, Westinghouse steam division, look over the gas compressor section of a gas turbine-powered blast furnace blowing unit. The 125,000 cfm capacity blower, first for the steel industry will be installed at USS's South Works, Chicago.

Big Oxygen Furnaces Planned by J&L

Size of two new basic oxygen steelmaking furnaces to be built at Jones and Laughlin's Cleveland mill has been increased to 200 tons capacity from the original 160 tons, according to J. R. Powell, works manager.

The contract for the \$24 million installation has been awarded to the Koppers Co. of Pittsburgh. This represents a major breakthrough for them into oxygen furnaces. Others in the U. S. have been built by Kaiser Engineers, John Moore & Sons and McLouth Steel.

World's Largest — Construction will be done by Pennsylvania Engineering Corp., New Castle, Pa., which has built all basic oxygen units in the U. S. Largest current operating oxygen furnaces in the U. S. turn out about 110 tons per

heat, so the new Cleveland units are expected to be the world's largest.

"Initially, we expect to produce heats of about 135 tons," Mr. Powell said, "and gradually work up to the ultimate."

The furnaces were originally announced this spring. Construction is scheduled to start in December with start-up slated for early in 1961. A 2500 ton-per-day blast furnace, among the largest in the U. S., will also be built in the \$54 million expansion program.

Capacity Climbs — Total steel-making capacity will be 1.92 million tons annually. Sheet and plate rolling capacity has also been doubled in the past two years.

The current program will bring the total expended by J&L for the Cleveland plant to over \$250 million since it was purchased from the Otis Steel Co. in 1942.

J&L has already spent more than \$165 million in equipping this unit as one of the industry's large producers of hot and cold rolled sheets, principally for the automotive and appliance industries.

World Steel Production

World steel production, excluding Communist China and North Korea, rose sharply in the first half of 1959, according to the Iron and Steel Division of the Department of Commerce.

In the first six months of this year it reached an annual rate of 346 million tons, compared with 289 million tons produced in 1958 and the 316 million ton output of 1957.

Major part of the recovery is credited to the U. S. which produced a record 64.3 million tons of ingots in the first half of 1959. Substantial production increases were also noted for Canada, Japan and the U.S.S.R.

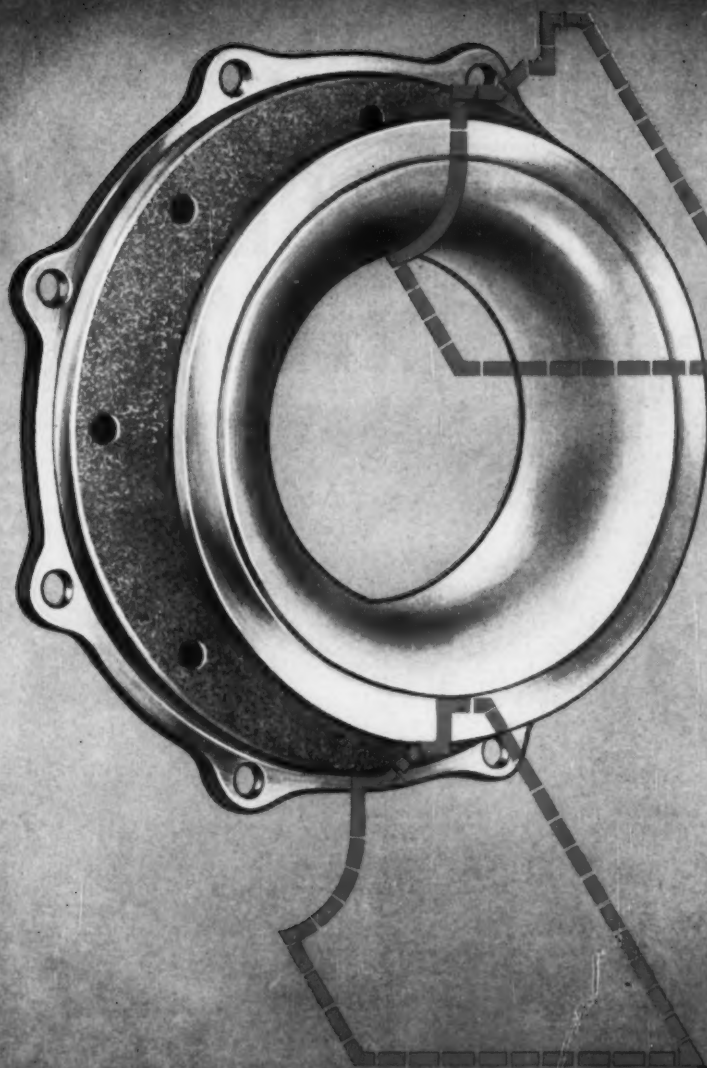
SAGE Contract Awarded

A \$9 million Air Force contract has been awarded the Burroughs Corp. for work on 36 SAGE units. The award represents new money the service has allotted the company to build the large-scale electronic devices at its Electronic Computer Div. at Detroit.

Homestead Plant Expanding

A second continuous quenching and tempering facility for the heat treatment of constructional alloy steel plates will be installed at the Homestead District Works of United States Steel at Homestead, Pa.

The new line will be almost identical to the existing facility at the 160 in. plate mill, and will require about one year to complete after the start of construction.



**seven surfaces to turn:
one template, one slide, two tools.**

Machine tools are rarely if ever bought because somebody thinks they might come in handy. They are bought because a specific job needs to be done and because a particular machine is judged best fitted to do it. However, no matter how specific your need may be, *versatility* is the greatest by-product you can buy, and the greatest assurance of a profitable investment.

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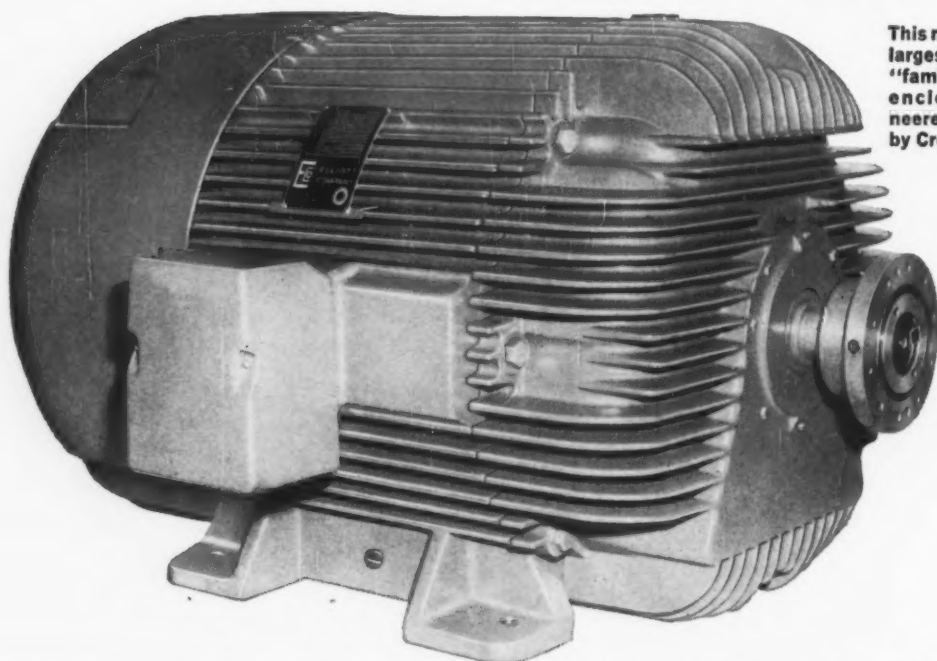
pieces like the one illustrated. Your New Britain **+6F+** is every bit as efficient. Simple tooling; fast setup; rapid, accurate production.

The applications for contour turning are very broad. If you have contour turning, boring and facing work on shafts or chucking work, you should be interested in the New Britain **+6F+**. Many shops whose production requirements wouldn't justify very expensive, lightning-fast production can make highly profitable use of one of the basic models because of its versatility, accuracy, fast setup and inexpensive tooling. At the other end of the scale,



you can't touch our machines for tremendous volume work. Obviously, this subject is much too broad and too important to do justice to it here. We would like to send you literature that spells things out in much more detail. New Britain-Gridley Machine Division, The New Britain Machine Company, New Britain, Connecticut.

BETTER COOLING MEANS LONGER LIFE LESS MAINTENANCE



This new 300-hp unit is the largest of the Elliott C-W "family" of ribbed-frame enclosed motors, pioneered in the United States by Crocker-Wheeler.

ELLIOTT C-W SEALEDPOWER MOTORS

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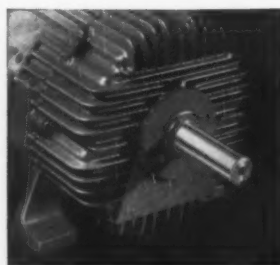
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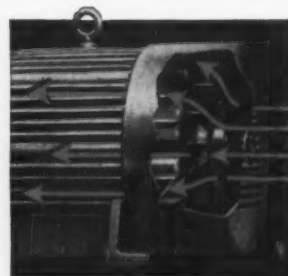
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Extra fins keep bearing cool. This potential trouble spot is effectively cooled by the generous extra fins seen in the photograph above.



Cooling blast hugs frame. Air is directed along fins extending entire motor length. Easy to clean — no enclosed cooling passages to clog up.



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Alwin F. Franz

Modernize to Stay Competitive

Small steel producers are faced with the problem of competing with big companies in production costs.

Alwin F. Franz believes modernization is the best way to meet the situation. He is now putting his theory into practice.

■ The major problem faced by Alwin F. Franz, and the company he heads, Colorado Fuel and Iron Corp., is one that's shared by a large segment of all industry.

It's the problem of the comparatively small producer trying to stay competitive in cost of production with the giants of the industry.

For Mr. Franz, the only answer is modernization of plant and equipment and he's putting it into practice at CF & I.

Practices What He Preaches—

This fall, CF & I will embark on a \$21 million expansion program designed to improve the company's competitive position. The program, long in the planning stage, was sparked by Mr. Franz, an outspoken advocate of modernization and improvement.

Speaking before the American Iron and Steel Institute last spring, Mr. Franz pointed out that smaller producers are faced with serious cost and price squeeze.

Cost Solution—"The true solution to these issues can be found only in a frontal attack on costs," he declared. "Costs must be kept in line and, if possible, reduced—for, with price limitations, any increase in costs will further squeeze profit margins."

This attack on costs can be made in two ways, Mr. Franz says. First, by fully modernizing plant and



ALWIN F. FRANZ: Ready for growth in the West.

equipment to take advantage of the latest developments in technology, and second, by keeping operating costs at a reasonable level.

This is of paramount importance to the small producer, who must rid himself of obsolete facilities in order to maintain a competitive position.

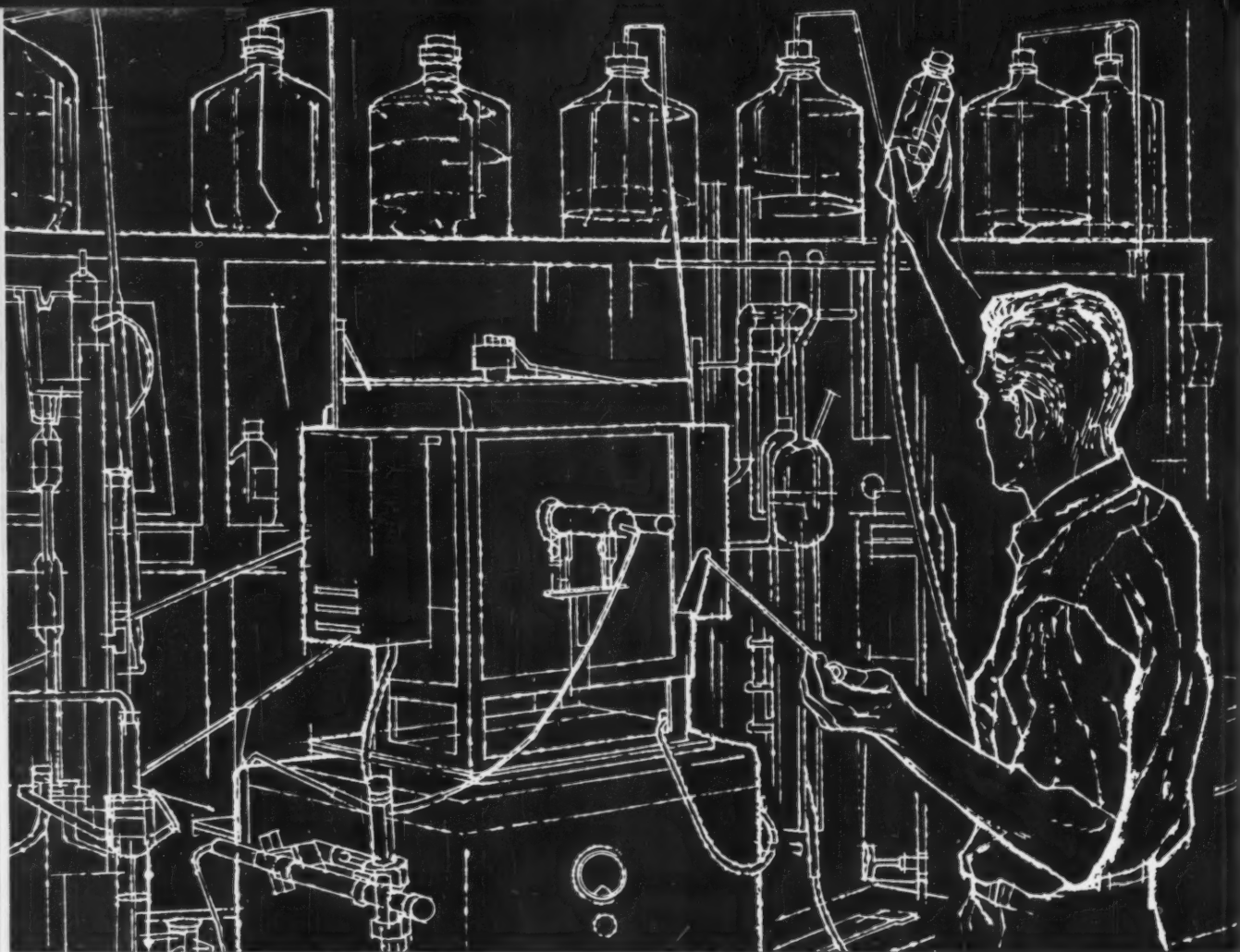
Plans Outlined—This is how CF & I plans to stay competitive:

An \$8 million oxygen steel converter with a capacity of 50,000 ingot tons per month will be installed at Pueblo, Colo. A heavy-duty cooling bed will be added to the 25-in. mill at Pueblo to increase the structural steel capacity by about 132,000 tons a year.

Other improvements will be added to improve and increase capacity for structurals, wire and wire products at Pueblo, the South San Francisco plant and at Oakland.

Started in the Mill—Mr. Franz is well-qualified to direct the modernization program. He began his career in the steel industry as an open-hearth pitman, later became a helper, and then a melter.

His climb to the executive level continued and in 1946 was named works manager of CF & I's Pueblo plant. In 1949 he was elected executive vice president of the company and in 1952 was named president.




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How Price Cuts Affect Progress

Reducing prices on the basis of rapid productivity gains is desirable, but difficult.

By crippling earnings, such action may slow down the rate of future increases.

■ You hear all kinds of arguments that industries with rapid productivity gains can afford price cuts—in fact, are obligated to make them.

Supporters of the price reduction method of combating inflation undoubtedly got ammunition from the government's fact-finding study on the steel strike.

The report noted steelworkers now receive hourly wages of \$3.10—one of the highest rates in industry. Steel prices, the Mitchell study also indicated, have increased faster than wholesale and retail prices.

Facts and Conclusions—From these facts could come the conclusion that both steel prices and steel wages are already high enough. And the suggestion that steel price cuts are possible.

This same argument was recently advanced by Raymond J. Saulnier, chairman of the President's Council of Economic Advisors. While Mr. Saulnier did not single out the steel industry, the inference was obvious.

Reasonable Hope?—Discussing price stability, he pointed out there are areas—such as services and distribution—where price reductions from productivity gains are unlikely. But in industries where such gains are especially rapid it is "most reasonable to expect price reductions that are essential for price stability. . . ."

"We should aim," he added, "not

merely to hold prices steady, but extend part of the benefit of productivity to the public in the form of price reductions."

Productivity's Origin—Such action, while desirable, is difficult. The price reduction approach overlooks one important fact: Sound pricing—providing reasonable profits for future expansion—is vital for continued productivity gains.

Consider Investment—The Mitchell report, while noting that post-war steel profits per sales dollar were higher than those in all of

manufacturing, adds an important qualification. "Profits in relation to sales must generally be higher in industries with high capital investments in order to yield a given return on investment. In the steel industry capital investment per dollar of revenue is about one-quarter higher than in manufacturing as a whole."

In the short-term it's possible productivity provides a valid excuse for siphoning off profits through price reductions. But in terms of insuring future productivity gains it isn't that simple.

Industry Wants Uniform Taxes

■ Taxation creates an expensive byproduct for American industry. It's the high cost of complying with the many varied requirements in paying Federal, state, and local taxes. And industry expects this cost to keep right on increasing.

That, at least, is the conclusion of over 200 manufacturers surveyed by the National Industrial Conference Board. Their chief complaint: The volume increase in tax returns, assessments, tax bills, protests and correspondence prepared and handled.

Specific Suggestions—Their chief suggestion: More uniformity in tax regulations. Specifically they want more uniformity in defining taxable income, in allocating taxable income and taxable transactions among taxing bodies, and in tax forms filed.

The expense of record keeping, filing, and contesting taxes runs from 1 to 3 pct of the total tax bill, the companies say. For smaller-sized companies the cost of tax

work is apparently proportionately greater.

Outside Aid—Included in the cost of tax compliance are fees paid to outside attorneys, accountants, and other tax consultants. Other expenses are subscriptions to tax services and use of outside auditors.

U. S. Firm Bids Low—Using Foreign Labor

An interesting, if disturbing, trend in American business turned up in recent bidding to supply turbines for the Tennessee Valley Authority.

Baldwin - Lima - Hamilton Corp. put in the low bid—just barely below that of an English competitor. But B-L-H's low bid was possible only because the company based it on getting "substantial amounts of material and labor in Europe."

Action was necessary, says B-L-H, because of foreign competition's low bids on previous orders.

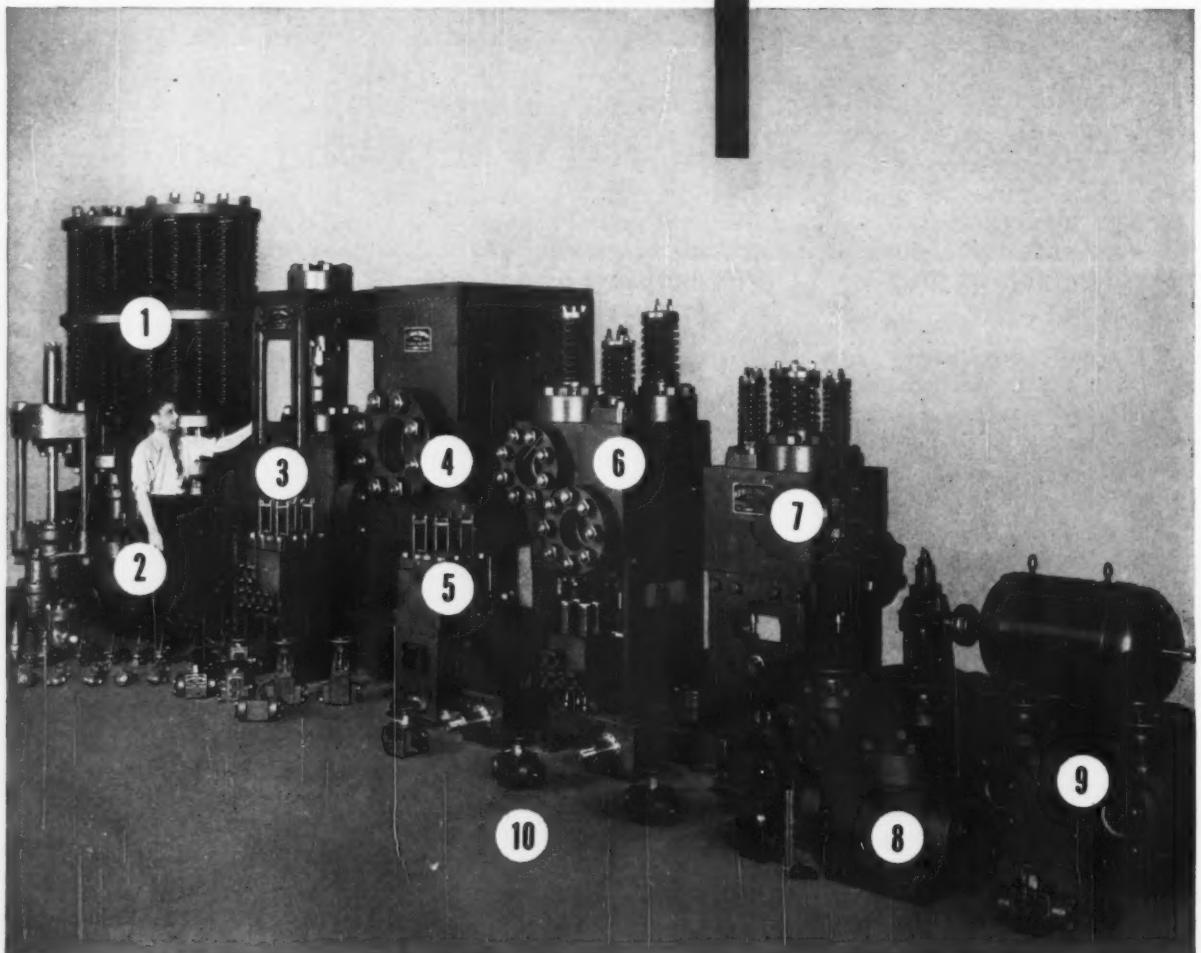
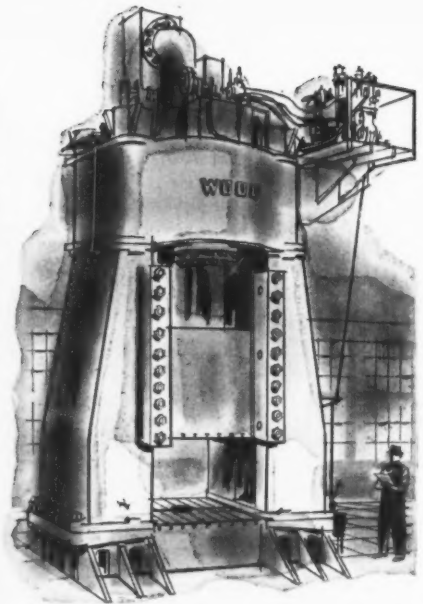
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Code Customer-Prospect Lists For Effective Sales Effort

Lists of customers and prospects coded by SIC classes are valuable sales tools; they show where sales effort should go.

But the sales manager must be willing to pitch in to make the system work. It's a job that can not be delegated.

■ The growing tendency to glamorize the "marketing concept" may do more harm than good. On one hand, some managements have plunged into it with no idea of the amount of effort needed to make it work. Others have brushed it off with a cynical, "It's nothing more than shirtsleeves selling—like we had to do before the war."

The Button - Pushers—In the former case, the idea seems to be that it can be done by pushbuttons: IBM cards are punched up and a wad of material tossed at the salesmen. The result is chaos if the salesmen try to wade through it. But since few do, the net effect is a waste of time and money.

The "We know more about our markets than some machine" school of thought is rugged individualism, an era that went out with the double-breasted suit. Many of those who didn't fold then, got their come-uppance in 1958.

Take Three Steps—But progressive companies now recognize that the marketing concept will work for them if they do three things: (1) Decide the industries they want to

Modern Marketing Second of a Series

NEXT WEEK: Target Accounts

It pays to know how much effort should be spent on every major customer and prospect. The third article in this series will outline a new, organized sales technique. Last week's reported on new product planning.

sell; (2) collect the right basic data; (3) organize the material for practical use by the sales force.

John M. Davidson, who heads up sales to metalworking for Pennsalt Chemicals Corp., calls this three-pronged program Mature Marketing. "When we started on it," he'll tell you, "I found that we had to put a tremendous amount of time into it. I had to put aside several other projects I was working on."

Good Data a Must—"Of course," he adds "we had to have good information to work with. And finally, we needed men like Don Sorber in our market research department to put the material into a form the sales force could use."

John Davidson will tell you that his department moved into "Mature Marketing" just about a year ago: "We knew we weren't covering all the bases, that salesmen were wasting time on poor prospects instead of calling on some large companies they were unaware of."

How to Do It?—Frankly, it is fairly easy to recognize a situation

Cartoon Cards Alert Salesmen



POSTCARDS like this were sent to all field salesmen while market research team was organizing facts and figures on customers and prospects.

like that. The real job is to organize for more effective marketing.

The first step on the road out was to assign a Standard Industrial Classification (SIC) code number to every customer and prospect. Don Sorber did this on a 4-digit SIC basis. This means, for example, that a manufacturer of truck and bus bodies was given code number 3713—and so on for each of the 185 4-digit segments of metalworking.

Add Sales Data—Next, the number of workers in each plant was listed. In the case of customers, their 1957 and 1958 purchases from Pennsalt's Metal Processing Dept. were also entered.

Coding customers by SIC and employment became practical in 1958 with publication of a master list showing such data for all metalworking plants with 20 or more production workers.

Punch It Up—All of this information was punched into IBM cards. The IBM printer then came up with four sets of tabulations which gave John Davidson some very useful data:

(1) For the entire department, a list of customers, by industry groups showing dollar sales to each.

(2) The same arrangement for each sales territory.

(3) For the entire department, a list showing how various products

sell to various industries.

(4) Again, for the whole operation, a breakdown by counties.

Don't Delegate It!—At this point, the job lands squarely in the salesmanager's lap. He must make this information work for him by carefully checking every industry group to see if it is a worth while prospect.

When you are selling chemicals for finishing metals you throw out blast furnaces and hot rolling mills, foundries and forge shops. You finally reduce the list to about 100 metalworking industry groups.

Wheat vs. Chaff—But not all these groups are equally good prospects. So the salesmanager still has

The Sales Target—and the Setup

This is the sales target—and the organization designed to hit it—at Pennsalt's Metal Processing Dept., Philadelphia. Its job is to merchandise nearly 50 different products for the surface preparation and finishing of metals.

Its customers and prospects fall

into about 100 different segments of metalworking. These companies range from auto and appliance makers to plating shops and steel mills.

The sales force covering this market is headed by John M. Davidson, department sales man-

ager. He has three industry managers in Philadelphia and five district offices. Total sales force: 28.

Mr. Davidson can call on the company's marketing department, headed by Paul C. Hurley, who has assigned one of his staff, Donald K. Sorber, to metalworking markets.

A Pennsalt Marketing Team



DIRECTOR of market research for Pennsalt, Paul C. Hurley.



SALES MANAGER, Metal Processing Dept., John M. Davidson.



SPECIALIST on metalworking markets, Donald K. Sorber.

a lot of work to do on the list.

He must decide how small a plant (based on number of plant workers) is worth a salesman's call. Here is a plant employing 300 workers making widgets. (The widget, as you must know, is primarily a diecasting with a small stamped handle.) The market here is probably limited to 10 drums of drawing compound a year.

How Do They Rate?—But here is a plant producing cold-rolled steel strip from hot-rolled bands. It employs 100 plant workers, but it is a big user of pickling compounds. Problem for the sales manager: Which plant is worth one or more calls?

Rather than try to answer that specifically, he merely assigns each a priority: The big widget plant at the bottom, the steel processor at the top. The district manager and his salesmen can work out the details on calls.

Set Up by Areas—The next step is to organize the customer-prospect list by sales territories. While this work is going on it is a sound idea to pre-condition the field sales force properly to receive it.

Any time a home office starts working with lists of customers and prospects it risks stepping on sensitive sales toes. The initial effect of springing such data on an unsuspecting field force has often been bad.

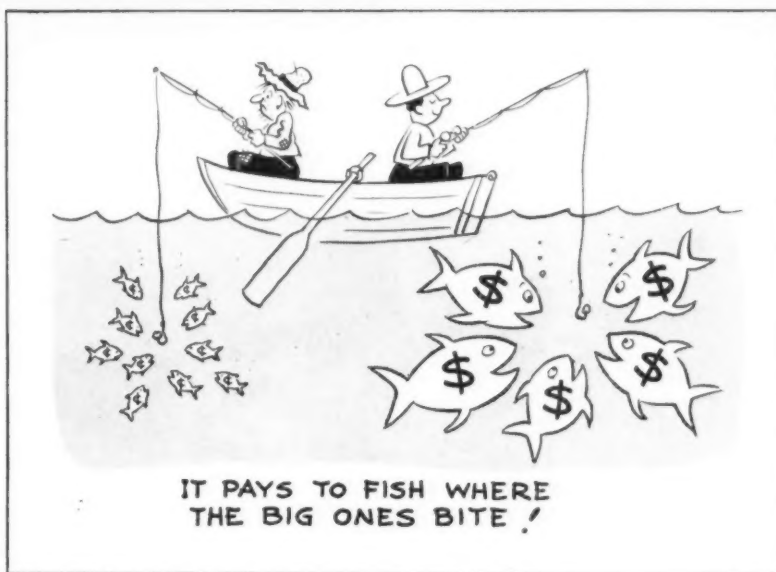
The Pre-Sell—So Pennsalt's marketing team began by trying to create a favorable reception for the forthcoming data. One device was the use of "exciter" postcards, two of which are shown in the accompanying sketches. District managers were told what was coming, too.

Here is what the district sales manager finally received:

(1) A list of industries of interest to the company. This is really a directive from management on sales objectives.

(2) A report of territory sales-by

Another "Teaser" to Sales Staff



SELLING THE IDEA that market data means money was purpose of cards. Otherwise, salesmen may resent home-office data sheets.

industry (1957-1958) so the district manager can decide where to put the emphasis on his present accounts.

(3) A prospect list by industry so he can decide where to put the new business sales emphasis.

A Nice Bundle—This is not too big a package for the district manager or his men. And it was clearly explained at a general sales meeting. Reaction from the field force has been excellent, i.e. "This is really useful. It names companies and it rates them."

The next step is for the district manager to go over the list. He knows the local situation better than the home office, can usually improve the list. Working with his salesmen he sets up a prime list of active prospects.

Cull the Duds—If what looks like a good prospect proves to be a dud, he adds another name to the prime prospect list to keep it up to date. Changes and results of calls are fed in to the home office to keep tabs on progress.

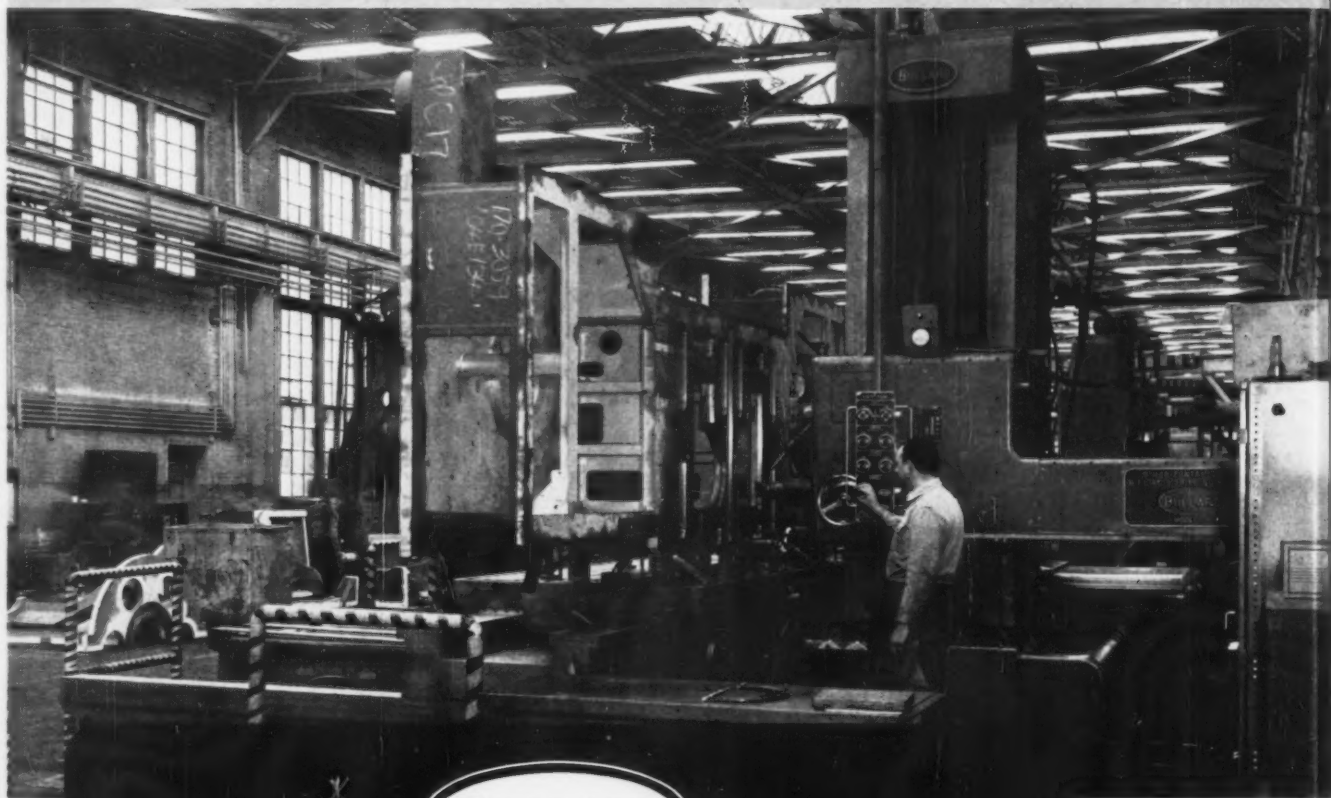
The sales manager has other controls and guides in his tabulated

lists. For one, he can figure the average share of sales to an industry in any area by applying average sales per plant worker to the number of plant workers in that industry. Then he compares this figure with actual sales for that area. This tells him which industries are below the company average in one area—i.e. what sort of plants should be emphasized on the prospect lists in that area.

In a Nutshell—In short, this operation has combined the rules of good selling with sound market information to make more effective use of selling effort. It is an application of the marketing concept stripped of the glamor which some people use to dazzle top management. It is mature marketing, where the only payoff desired is more productive sales time.

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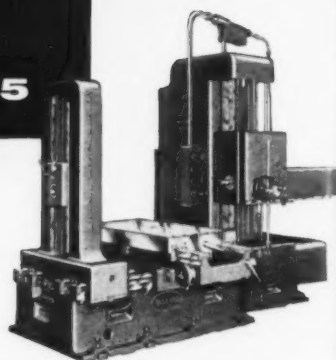


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Air Ride Dream Is Deflated

Autos Ride Just as Smoothly on Steel

Merits of air suspension, first introduced on 1958 cars, were vastly over-inflated by auto-makers.

With buyers unwilling to pay for doubtful benefits, only two cars are expected to offer it in 1960.—By A. E. Fleming.

■ That hissing sound you hear is the rapidly-deflating air suspension market.

Car buyers aren't buying air ride. And it looks like only two car makers will offer the system in 1960 compared to 11 this year.

Primary reasons for air suspension apathy are price and performance. Retail cost on 1959 cars ranged from \$98.50 on Ramblers to \$214.60 on Cadillacs. Average motorists aren't inclined to spend this amount of money for a suspension system that offers few advantages over conventional leaf, coil or torsion bar units.

Who Can Tell—Buick general manager Edward D. Rollert's explanation of why air suspension never really got off the ground: "Buick's regular suspension, featuring improvements in coil springs, has made the demand for air ride so small that it isn't worth continuing. Even experts have a tough time telling whether or not they're driving an air suspension car."

Buick, Oldsmobile and Pontiac are three of the nine companies that will strike air suspension from their optional equipment lists in 1960. Although neither Chevrolet nor Chrysler Corp.'s five car makes have committed themselves, they also are reported ready to shelve their units.

Ford Div. marketed air suspension only briefly in 1958 before setting it aside because of lack of demand. Edsel, Mercury, Lincoln and Studebaker have never offered it.

How to Sell—So Cadillac and Rambler may be the only car makers who will make air suspension available on 1960 models.

Luxury-conscious Cadillac purchasers are willing and able to pay the premium price for air suspension.

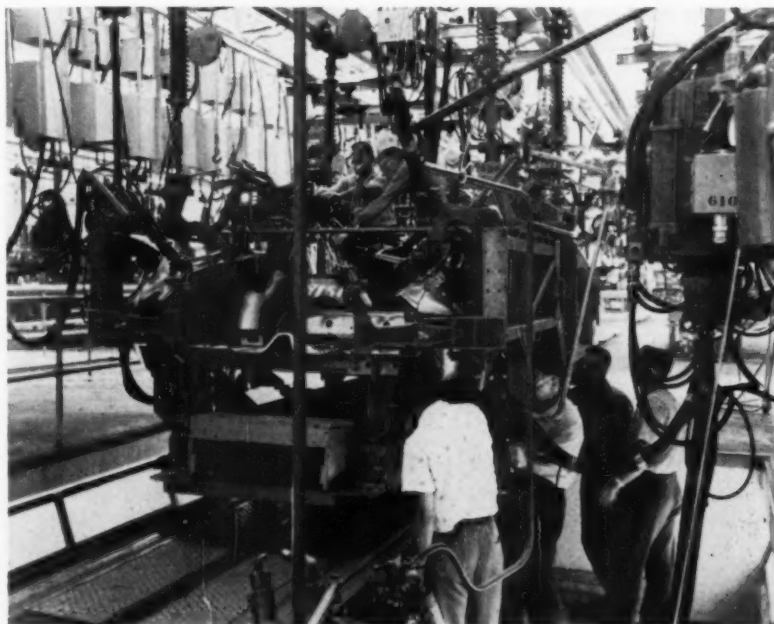
And Rambler has promoted the system as a special purpose device handy for loading situations where vehicle raising and lowering is

desired. Consequently, station wagons have taken a major share of Rambler air ride sales.

Hidden Value—Chrysler Corp. agrees with Rambler's concept of air suspension utility. "As far as ride superiority goes, air suspension isn't great enough to stir interest among the general public," says a company spokesman. "The real advantage is load leveling. But there are some independent operators who sell mechanical levelizers cheaper than we can."

When air suspension first arrived on the automobile scene in 1958 these advantages were stressed: Car

Assembly Line for Supervisors



BACK TO SCHOOL: All but 21 employees in Chrysler Corp.'s Clairpointe plant in Detroit are supervisors learning to assemble 1960 model cars. The plant is used to pre-test parts, tools and assembly techniques.

height would be the same at all times regardless of passenger load. Ride would be safe on boulevards, controllable on rough roads. Ride would be level with no perceptible pitch. A level suspension at a constant height would keep headlights on the road. Cars would be able to better cope with unusual clearance conditions.

However, just under 100,000 air suspension units were factory installed on 1958 cars, practically all of them General Motors products. The final 1959 count may be closer to 50,000.

In a Declining Market—Cadillac's air ride installation fell to 10.5 pct of production on 1959 models from 14 pct in 1958, high for the industry both years.

Other companies suffered declines, too. Besides Cadillac, only Buick, De Soto, Chrysler and Imperial stayed above the 1 pct level. Chevrolet, Pontiac, Oldsmobile, Plymouth, Dodge and Rambler were all below 1 pct.

There's one consolation for air

ride, though. It continues to thrive in the bus and truck market. GMC, for one, has offered it for five years with great success.

Romney Blasts Steel For Dragging Heels

George Romney, American Motors president, launched a verbal blast at steel strike negotiators during his company's press preview of 1960 models.

"One of the most regrettable facts of American life today is the situation where union and employee power can be concentrated to the point where an industry as basic to the economy of the nation as steel can be shut down as the result of the position of either group," Mr. Romney said.

"I think any time we permit a few men in labor or industry to reach the point where they can cripple the whole economy and affect the whole public interest, we have created a condition completely contrary to the spirit of America."

Automotive Production

WEEK ENDING	CARS	TRUCKS
Aug. 29, 1959	17,565	14,114
Aug. 22, 1959	31,848	14,698
Aug. 30, 1958	16,771	8,810
Aug. 23, 1958	25,918	8,895
TO DATE 1959	4,072,597	819,275
TO DATE 1958	2,743,655	562,000

*Preliminary

Source: Ward's Reports

Back to Business—Turning from steel to automobiles, Mr. Romney sees big things for the future of the compact car. But he believes, with Big Three small car crash programs just getting started, the 1960 model year will not reflect the full impact of their entry.

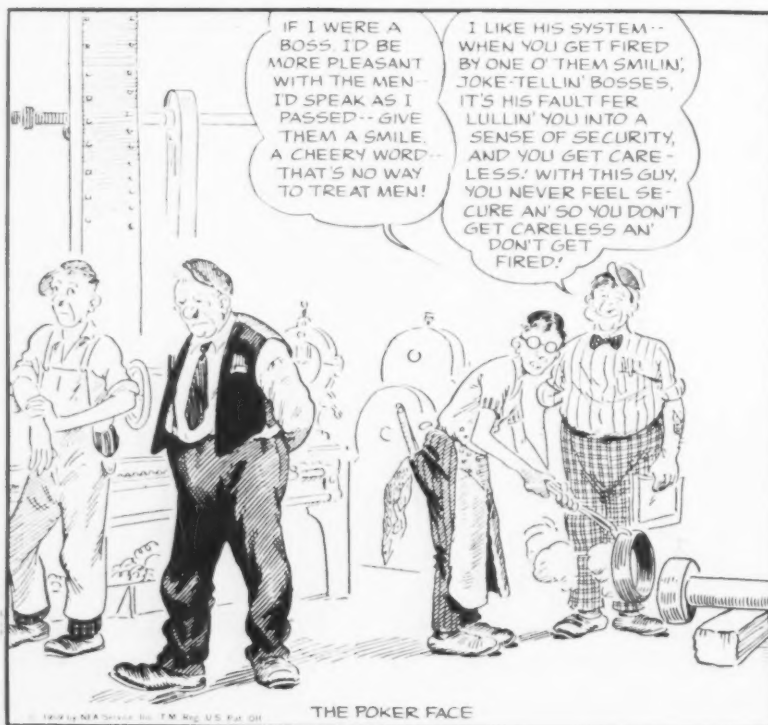
However, he predicts that in the 1960 calendar year, smaller car sales in the U. S. will be about 2,250,000 units. Of the total, some 1,750,000 will be compact cars, the remainder foreign models. American Motor's target for 1960 is 500,000 sales.

There is considerable speculation as to who will be hurt by this surging compact car market. "If anybody is going to get seriously hurt, it will be the present medium-priced cars or other big car lines," says Romney.

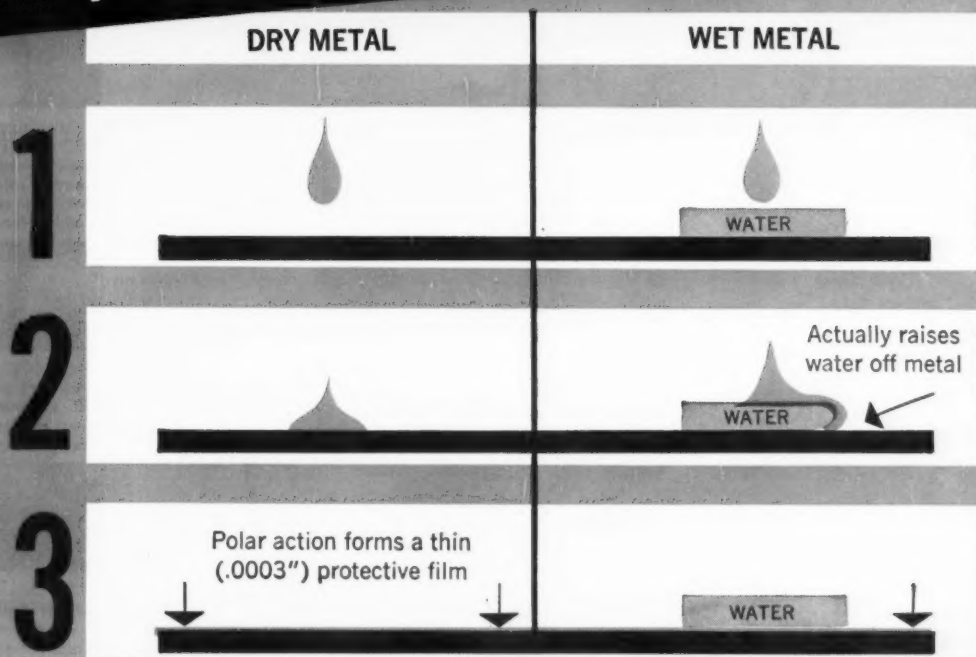
Which Will Suffer—He points out these significant trends from 1957 through the first six months of 1959: Total big car market penetration has declined. The increase of small and compact car sales has been largely at the expense of the medium-price lines; Chevrolet, Ford and Plymouth's percentage of industry has been maintained largely at the expense of medium-price line sales.

No Foreseen Loss—At least one automotive industry official does not agree with Mr. Romney. Says Mr. Rollert of Buick: "The new American-built compact cars will have little effect on the market in which Buick sells. I think the new compact cars will affect the foreign import market far more than they'll affect us."

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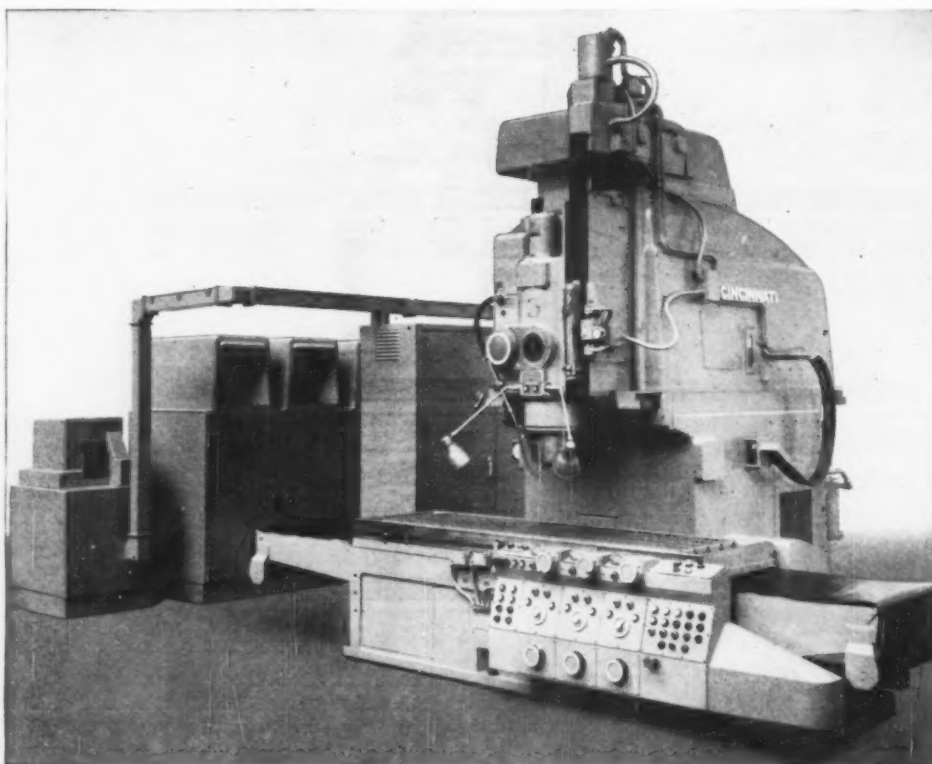


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CINCINNATI NUMERICAL CONTROL

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CINCINNATI 30" Vertical Hydro-Tel Milling Machine, 60" table traverse, equipped with CNC. Two cabinets at far left house numerical control equipment.

No more "cut and try" for machining operations. No change in setup for rough and finish cuts, new and reground cutters, right- and left-hand parts. No operator fatigue near the end of the shift. These are some of the ways in which Cincinnati Numerically Controlled (CNC) Machine Tools give you positive cost control.

Other CNC advantages: **Single Responsibility**. . . coordinated, cooperative effort by Cincinnati specialists in numerical control and in every activity required to deliver

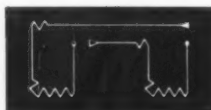
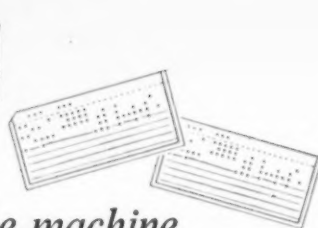
completely integrated machines. **Simple Programming**. . . CNC requires fewer input data points. **Precision Machining**. . . CNC is an absolute digital-analog system, assuring precise accuracy. **Simple to Use, Versatile**.

Cincinnati Numerical Control is the newest, most positive way to reduce lead time and many non-productive elements of excessive machining costs. Want specific job application data? Just present your production problems to us. For preliminary information, write for publication M-2066.

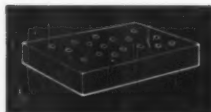
The Cincinnati Milling Machine Co., Cincinnati 9, Ohio



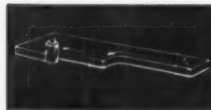
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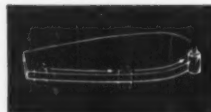
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CNC assures reliable automatic selection of feeds, speeds, spindles, coolant flow and other auxiliary machine functions.



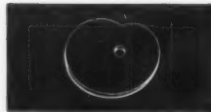
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Multiple straight line cuts to exact length, and with abrupt changes in direction, can be programmed, set up and run in a fraction of the time required using conventional methods.



CONTOURING
CNC greatly reduces lead time in reproducing complex, contoured parts; eliminates need for expensive templates, masters.



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Fast, extremely accurate machining of master cams is assured on CNC controlled machines. CNC system of parabolic interpolation greatly simplifies programming of contour.

CINCINNATI®

Help on the Way for Lead, Zinc

Congress Wants Review of Domestic Mining

Congress wants a study of the problems of domestic mining, particularly lead and zinc.

Lawmakers make it plain they want restrictions on imports.—By G. H. Baker.

■ Congress is putting the heat on the White House for some long-range answers to domestic mining industry problems. Lead, zinc and fluorspar are being particularly spotlighted.

The Senate Interior Committee this week was studying a House-passed resolution calling on the Executive branches of government to review existing programs to aid domestic mining.

Against Imports—Earlier, the Senate approved, over Administration objections, an order to the U. S. Tariff Commission requiring it to study current lead and zinc import restrictions and fluorspar problems and report to Congress early next year on what additional curbs are needed.

In directing the Commission to make concrete findings and recommendations, the lawmakers firmly indicated they want additional restrictions on lead and zinc imports.

Long-Range Viewpoint—The House-passed resolution is not binding on the Administration. It spells out Congressional concern with the need to maintain a stable and healthy domestic mining industry without dependence on foreign sources of metals and minerals. It also calls for policies to insure orderly discovery and development of new reserves, and the need for research in mining, metallurgy, and

marketing to promote the use of domestic mineral and metal resources.

The Senate has several similar measures pending, and may revise the House version of the resolution somewhat. One Senate measure would provide for a new national minerals policy to be carried out by the Interior Department. This would require the Interior Secretary to make annual reports to Congress on the mineral industries, and submit legislation when needed to keep them strong.

Industry Hopes—The Senate-ordered Tariff Commission study is the best hope of the most distressed

segments of the mining industry—lead, zinc, and fluorspar. A year ago, the Commission split 3-3 over whether to impose maximum tariffs on lead and zinc plus quotas cutting imports in half, or to cut imports only by 20 pct. The President followed the milder recommendation.

But the new study could lead to recommendation for more restrictive actions, such as those favored by three of the commissioners.

Meanwhile, five mining-state congressmen have introduced bills to provide Federal differential payments to small lead and zinc producers.

Working on the Labor Bill



SLOW PROGRESS: House and Senate conferees were slow in coming up with a compromise between their versions of what constitutes an adequate labor control bill. Key figures (left to right) are Congressman William H. Ayers and Senators John F. Kennedy and Barry Goldwater.

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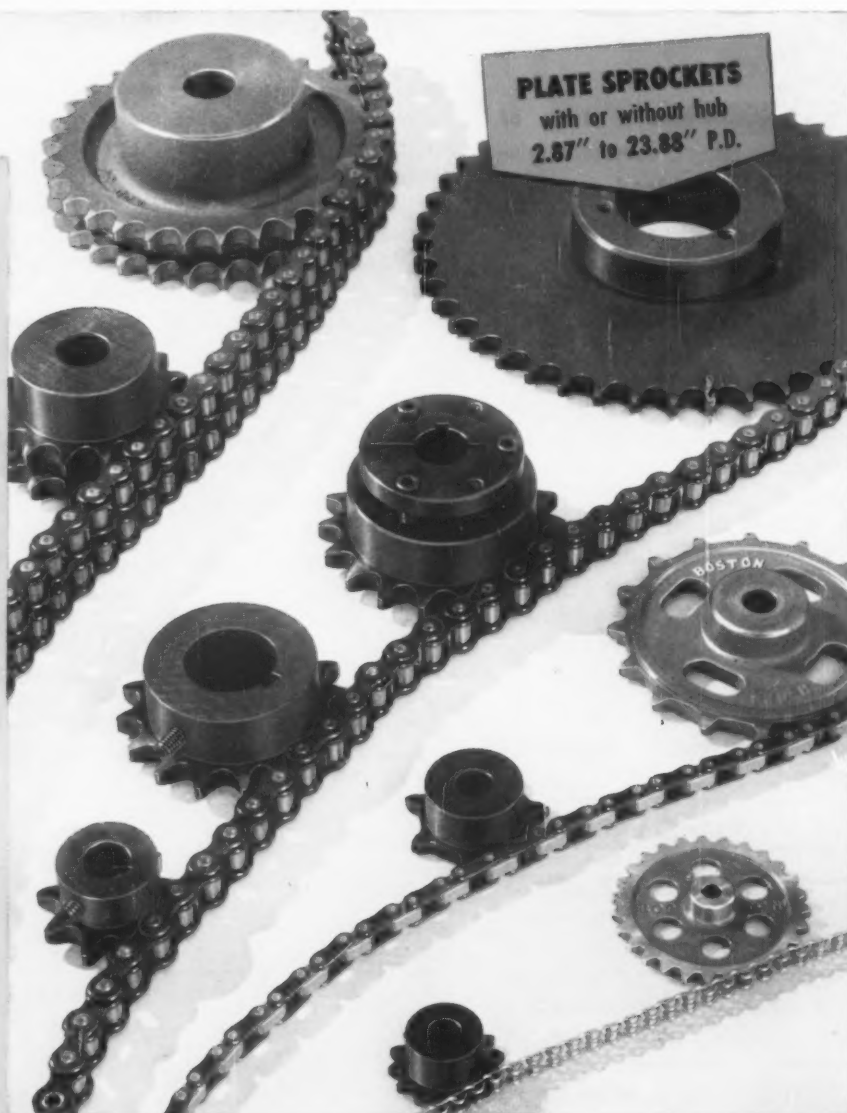
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How Oregon Digs In and Grows

Mineral Projects Spur Metalworking Sales

During the last two years Oregon's mineral industry operated at \$200 million level.

Now new projects will boost production still more.—By R. R. Kay.

■ Oregon's high-riding mineral industry is creating a healthy market for metalworking equipment.

Stepped-up activity in mining, processing, and exploration means (1) bigger production and (2) bigger sales in a wide variety of metalworking machinery and materials.

Some \$85 million worth of minerals came out of Oregon's pits and mines during 1957-58. That's the U. S. Bureau of Mines estimate. And with value added by processing, the industry's two-year output hit the \$200 million mark.

More Silicon—Here are some new projects. They'll beef-up the state's mining even more.

National Metallurgical Co., Springfield, has added silicon production facilities. The half-million dollar program is doubling the plant's output. Chief markets for the products are Ohio, Illinois, and California.

A \$3 million uranium reduction plant is now in use. Its rated capacity is 210 tons of ore per day. The Lakeview Mining Co. has a sure customer for five years. The Atomic Energy Commission buys its uranium oxide.

Wah Chang's Plans—Wah Chang Corp., Albany, plans to melt, refine, and cast a variety of metals: tungsten, molybdenum, tantalum, columbium, hafnium, and zirconium.

"Hot" Lab Started—The company claims its new type electron beam furnace can do continuous melting and casting of high purity ingots 4 ft long with 6 in. diam. The furnace may prove out for commercial production of ultrapure reactive metals.

Also in Albany, the U. S. Bureau of Mines set up a "hot" laboratory facility. It will search out new uses for radioactive tracers.

Action in Idaho—Neighboring Idaho is also active with minerals production. Dr. E. F. Cook, Dean, University of Idaho's College of

Mines, points out that:

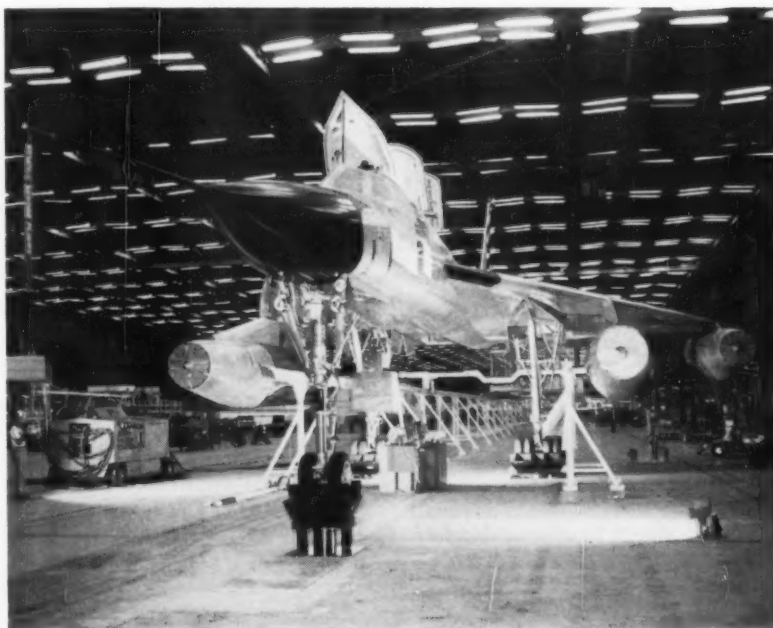
Bunker Hill Co. has a \$15 million program underway to modernize its lead smelter and zinc plant. It's also spending \$10 million for a fertilizer plant.

Anaconda Co. has set up a pilot plant in Latah County to explore its clays as a source of aluminum.

J. R. Simplot Co. is developing Bovill clay deposits for ceramic-grade clay and silica sand.

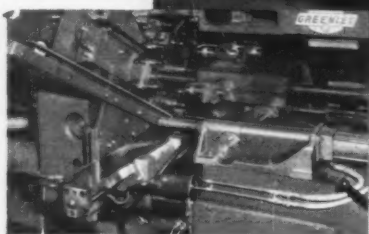
What's more, widespread exploration work is going on in Idaho for cobalt, thorium, uranium, and alluvial rare minerals.

Hydraulics Bring Gentle Letdown

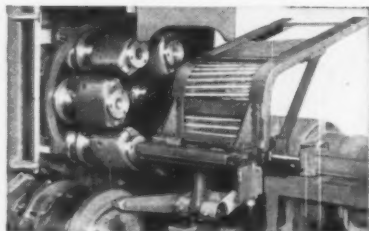


SOFT LANDING: Air Force B-58 Hustler bomber gets easy landing as it leaves elevated assembly line at Convair Div. of General Dynamics Corp. As bomber reaches end of line, elevated nine ft off factory floor, three hydraulic lifts bring it down to ground level.

Second Operation



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Greenlee standard Automatic Bar Machines, adapted for second operation work, profitably machine a wide variety of parts. Long shafts or short pieces are automatically loaded into the work spindle by any of the various loading arrangements shown. Parts are loaded in one position during the machining cycle, and machined in the remaining five cross slide and end working positions. For more information, see your Greenlee Distributor.

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WRITE FOR CATALOG No. A-405

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Spark Machining Gets Practical

New Line Covers Wide Range of Jobs

New electrical discharge machines are designed and built to meet the basic needs of industry.

Various workheads are suited to jobs ranging from simple to complex, and from small to large.—By E. J. Egan, Jr.

■ A complete line of 33 electrical discharge machines to suit almost any spark-machining need has just been announced by Cincinnati Milling Machine Co.

Trademarked "Elektrojet," the new line emphasizes the company's belief that electrical discharge is now a conventional machining method which satisfies a basic need of industry. Thus it requires its own standard machine tools.

Building Block Design—Featuring building-block design and construction, the 33 new machines are assembled chiefly from 16 basic components: two bases, two slides, four workheads, four base-tank units, and four power supplies. Many of these components are completely interchangeable.

Essentially, each machine in the lineup has a single base and a column. On these, the user may mount any of four interchangeable workheads.

Four Choices — The various workheads are suited to jobs that range from simple to complex, and from small to large. The four choices are:

Non-rotating: For work such as die sinking where vertical feed of a formed electrode produces the desired shape.

Rotating: In which the electrode revolves as it feeds into the work-

piece. This usually increases stock-removal rates. Spindle rotation can be stopped on this workhead, however, and the quill feed can be used alone for plunge-type cuts.

Universal: Which offers both quill feed and electrode rotation, plus eccentric or planetary rotation. The latter feature makes it possible to machine precise holes with an electrode smaller than the hole. It also simplifies machining of internal contours and annular grooves.

Ram type: Which allows extra large plunge cuts on die cavities with large surface areas.

The Result — Thus, spark-discharge machining has become available for a variety of difficult tool, die, and other jobs.

It can handle the "unmachinable" materials, since any metal that

conducts current will yield easily, despite its hardness or strength.

The process is ideal for diesinking, especially since perfection of the technique of diecasting electrodes—the "tools" for this job.

And, since there is no tool contact, deflection is zero, and fragile or delicate materials can be worked without fear.








Gear Index Drops

The American Gear Manufacturers' index for the month of August dropped to 262.8 (1947-49 = 100). This is a 4.2 pct decline from June, when the index rose to 274.2. (See chart.)

The decline, which appears to be seasonal, reverses the uptrend that has continued almost unabated since the end of 1958.

GEAR INDEX 1959

Base 1947-49=100

	0	50	100	150	200	250	300	
JAN 59								218.6
FEB								199.9
MAR								234.3
APR								255.6
MAY								241.0
JUN								274.2
JUL								262.8
AUG								
SEP								
OCT								
NOV								
DEC								

Source: American Gear Manufacturers Assn.

INDUSTRIAL BRIEFS

Package It—Purdue University, Lafayette, Ind., will hold a conference on writing packaging specs on Oct. 5 and 6. Package makers and shippers, transportation and government experts will lead panel discussions. For details write M. E. Ocker, at Purdue.

Gadsden Purchase—Mesta Machine Co., Pittsburgh, will design and manufacture as 132" four-high reversing plate mill and auxiliary equipment for Republic Steel Corp. at Gadsden, Ala. It is designed to roll reheated slabs into plate up to 126" wide and operate as a reversing rougher to produce breakdowns for the hot strip mill.

Commerce Consultant—William Cresson Masseth, Bethlehem Steel Co., has been named consultant to the director, Iron and Steel Div., Business and Defense Services Administration, U. S. Dept. of Commerce. Mr. Masseth, has been assigned to the Pittsburgh office of Bethlehem Steel in general product sales, and has been with the company since 1947.

Division Created—Dana Corp., Toledo, has created a new division to carry on the manufacture of Rzeppa constant velocity universal joints. To be known as the Convel Div., it will remain in its present location in Detroit. Acquisition by Dana of the Rzeppa assets of Gear Grinding Machine Co. occurred in May, 1959.

Expansion Completed—Expansion of the facilities and services of Gibbs Wire & Steel Co., Southington, Conn., has just been completed to meet the need for wire and strip metal. The company is a stocking wire warehouse for stainless steel, phosphor bronze, brass, beryllium-copper, high-carbon steel and music wire.

Capitol Change—The American Machine Tool Distributors' Assn. has moved its headquarters offices to 1500 Massachusetts Ave., N. W., Washington 5, D. C.

Ultra - Fine Powders—National Research Corp. has received a \$100,000 classified contract for the preparation and determination of properties of ultra-fine aluminum of interest to the missile program. The contract was granted by the U. S. Navy Bureau of Ordnance.

Hot Orders—Salem - Brosius, Inc., has orders from three steel companies for the design and erection of pusher-type slab and billet

heaters. The companies are U. S. Steel Corp., Crucible Steel Co. of America, and Inland Steel Co.

Wire Words—A. F. Sperduti, asst. chief engineer, The Fenn Mfg. Co., Newington, Conn., will address the Wire Assn. convention in Cleveland on Oct. 13. Mr. Sperduti's talk will be "The Rolling of Round Wire into Flats and Rectangles."

The advertisement features a large, dark rectangular box on the left with the word "NEW" in large, white, stylized letters at the top, followed by "miller" in a smaller, white, sans-serif font. Below this, a white line graph shows a series of connected peaks and valleys, with the word "BALANCED" written in white capital letters across the middle of the graph. To the right of the graph, the word "WAVE" is written in white capital letters. Below the graph, the words "ELECTRIC CONTROL WELDER" are written in white capital letters. To the right of the text box is a photograph of the Miller Electric Control Welder unit, a dark, rectangular machine with a control panel on the front featuring several dials and switches.

Brings out BEST in TIG Welding

This new Miller development improves quality, speed and range of tungsten inert gas welding in all automatic fixture and manual applications. Balanced wave (BW) characteristic results from new Miller balance control which eliminates the d-c component present in most welding currents. Output of the Miller BW welder is ONLY pure a-c, DELIVERS:

Excellent arc stability

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Q. You mean it? Weirkote can save you the cost of any further processing for corrosion protection after fabrication?

A. Absolutely. It's the continuous process that does it. Integrates the zinc to the steel so tightly there's never any peeling or flaking. No matter how severe the fabrication—any torture test you put it through—that bond stays put!

Q. Hmmm. Weirkote sounds great. One thing—is its zinc coating uniform throughout?

A. To the nth degree! Even the hardest-to-reach areas on the most complicated fabrications are completely protected.

Q. Corrosion-protected, you mean?

A. Corrosion-protected all over! So much so that you can work Weirkote to the very limits of the steel itself. So there you have it: stepped-up manufacturing efficiency, sharply curtailed manufacturing costs. All from Weirkote!

Send for free booklet that details the time-and-cost-saving advantages of skin-tight zinc-coated Weirkote. Just write Weirton Steel Company, Dept. A-1, Weirton, West Virginia.



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A Completely New Concept in Height Gage Design **STARRETT NO. 254 MASTER VERNIER HEIGHT GAGE**

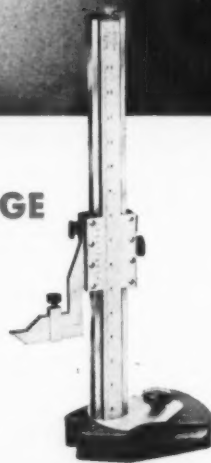
Here is a vernier height gage that can be used with supreme confidence in its master precision.

An exceptionally rugged, rigid, vibration-proof gage with new open-face, easy-reading vernier, flush-fitted to eliminate parallax errors . . . full-length fine adjusting screw controlled by a convenient knob on the substantial, natural grip base . . . Starrett satin chrome finish for no-glare, easy reading . . . quick-adjusting screw release for fast slide positioning . . . hardened and stabilized master bar (only Starrett provides

hardened bars on vernier gages).

Shown used with a Starrett No. 711F Last Word Indicator, new No. 254 Master Vernier Height Gages are available in 12, 18 and 24-inch sizes, all reading direct from base over the full range.

Ask your Industrial Supply Distributor to demonstrate the many precision features of this new Starrett height gage. Call him for quality products, dependable service . . . or write for complete Starrett catalog. Address Dept. IA. The L. S. Starrett Company, Athol, Massachusetts.



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MEN IN METALWORKING



F. E. Leib, promoted to vice president, Wire and Cable Div., Copperweld Steel Co.

Blaw-Knox Co., Power Piping Div.—**E. S. Wright**, appointed vice president and general manager.

Vitro Engineering Co.—**D. M. Checkley**, named president.

Rollway Bearing Co., Inc.—**H. F. Hodgkins, Jr.**, named vice president.

Northern Malleable Iron Co.—**R. D. Clark**, promoted to executive vice president; **D. B. Fulton**, named vice president, manufacturing; **Thomas Kirby** and **J. R. Entenmann**, became vice president and asst. manager, sales, respectively; and **A. W. Johnson**, named general superintendent.

U. S. Steel Corp.—**John Pugsley**, elected executive vice president, accounting.



L. M. Ballard, appointed president, Micro-Path, Inc., subsidiary of Topp Industries, Inc.

Kropp Forge Co.—**J. H. Nelson**, appointed vice president, sales.

Great Lakes Carbon Corp.—**A. R. Novy** and **Dr. A. J. Mueller**, appointed associate directors, research.

Loewy-Hydropress Div., Baldwin-Lima-Hamilton Corp.—**P. G. Mayer**, appointed general sales manager.

Union Carbide Metals Co.—**D. D. Barber**, named manganese product manager, sales, and **A. H. Barnes**, named chromium product manager, sales.

Associated Spring Corp.—**J. B. Barr**, appointed sales manager, Ohio Div., and **D. E. Lake**, appointed production manager, Milwaukee Div.

General Aniline & Film Corp., Dyestuff and Chemical Div.—**R. E. Brouillard**, appointed sales manager, pigments, and **H. A. Webb**, appointed sales manager, Dyestuffs.

The Carpenter Steel Co.—**A. R. Boyd**, promoted to district manager, Atlanta, Ga., territory.

Aluminum Co. of America—**C. M. Conklin**, appointed asst. district manager, Buffalo sales district.



J. T. Bachman, appointed vice president, Stainless and Strip Div., Jones & Laughlin Steel Corp.



J. W. Mahoney, named vice president, Western Region, H. K. Porter Co., Inc.

Rockwell Mfg. Co.—**R. C. Neaidengard**, elected controller.

Wyman-Gordon Co.—**L. K. Hutchinson**, promoted to works manager, Worcester plant.

The Colorado Fuel & Iron Corp., Wickwire Spencer Steel Div.—**John Skibicki**, named asst. superintendent, fabrications, Claymon (Del.) plant.

Heil Process Equipment Corp.—**R. F. Protiva**, appointed manager, market development, and **R. E.**
(Continued on P. 66)



J. J. Hoben, elected vice president and operations manager, Scovill Mfg. Co., Waterbury, Conn.

(Continued from P. 65)

Scheel, named manager, national branch sales.

Synthane Corp.—**J. F. Lent**, named district manager, Western New York State sales, with headquarters in Rochester.

General Electric Co.—**T. P. McGough**, promoted to district sales manager, Semiconductor Products Dept.

Republic Steel Corp., Berger Div.—**R. N. Wells**, named district manager, Baltimore.

Earle M. Jorgensen Co.—**H. A. Curwen**, appointed technical director.

The Clark Controller Co.—**W. J. Elperin**, appointed manager, St. Louis office.

Pittsburgh Pipe & Coupling Co.—**D. W. Patrick**, appointed sales manager.



R. G. Mehler, elected vice president, operations, Inland Steel Container Co.

The Colorado Fuel & Iron Corp., Pacific Coast Div.—**L. F. Bonofiglio**, appointed wire mill superintendent, South San Francisco plant.

I-T-E Circuit Breaker Co.—**T. D. Williams**, appointed manager, Minneapolis district sales office.



L. J. Larison, appointed manager, operations, American Bridge Div., U. S. Steel Corp.

Consolidated Electrodynamics Corp.—**Dr. K. W. Gardiner**, appointed assistant chief research chemist.

Allis-Chalmers Mfg. Co.—**C. R. Gibbs** named director of service, Industries Group. **T. J. Hanley**, appointed manager of the service section succeeding Mr. Gibbs. **L. J.**
(Continued on P. 70)

WAPAK SLITTERS



Photo courtesy of Stamco Inc., New Bremen, Ohio



Mirror Finish and ULTRA-KEEN EDGES reflect LOWER PRODUCTION COSTS

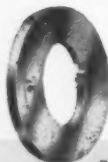


Longer continuous runs with less down-time are obtained with WAPAK Slitters and Rotary Shear Knives, because they're designed for high-speed cutting and trimming. Precision inspected by visual gage and profilometer.

Wapakoneta, one of the oldest and largest machine knife manufacturers in America, assures you of the exact heat treatment and grinding specified for your needs. Thickness and parallelism tolerances of .0002 or closer if required.

Use WAPAK MULTICUT for maximum production. WAPAK TUF CUT is engineered for shock-resistant cutting of heavy stock.

Export Div.:
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New York 7,
New York



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THE WAPAKONETA MACHINE CO., WAPAKONETA 11, OHIO

Knives Engineered for the Job Since 1891

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Service like this—planned for *you*—is an important way you profit from Pennsalt's "system approach" to metal finishing. Pennsalt supplies not only a complete line of metal cleaning, drawing, phosphatizing and etching compounds . . . but also a line of automatic surface treating machines. Pennsalt's *planned service* integrates machines, chemicals and finishing operations into a coordinated program to assure superior finishing . . . maximum economy.

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for your copy of free booklet on Pennsalt's Metal Preparation Service Plan, or ask your Pennsalt representative for more information on how the plan works. Write Dept. 226.



PACKAGED for
YOUR PRODUCTION

CF&I WIRE HELPS

"CF&I-Wickwire Wire Spiders give us 25% increase in productivity...20% less downtime... 80% less scrap loss," says Mr. Robert Mangold, Production Superintendent.

25% Increased Production—"Previously it required fifteen or twenty minutes to reset *each* of the eight to ten small coils used to feed our forming machine," explained Mr. Mangold. "For every eight hour shift, we lost two hours of production. Now with CF&I Spiders—which hold up to a 3000 lb. continuous length of wire—we change coils only once each shift. We save two hours per shift."

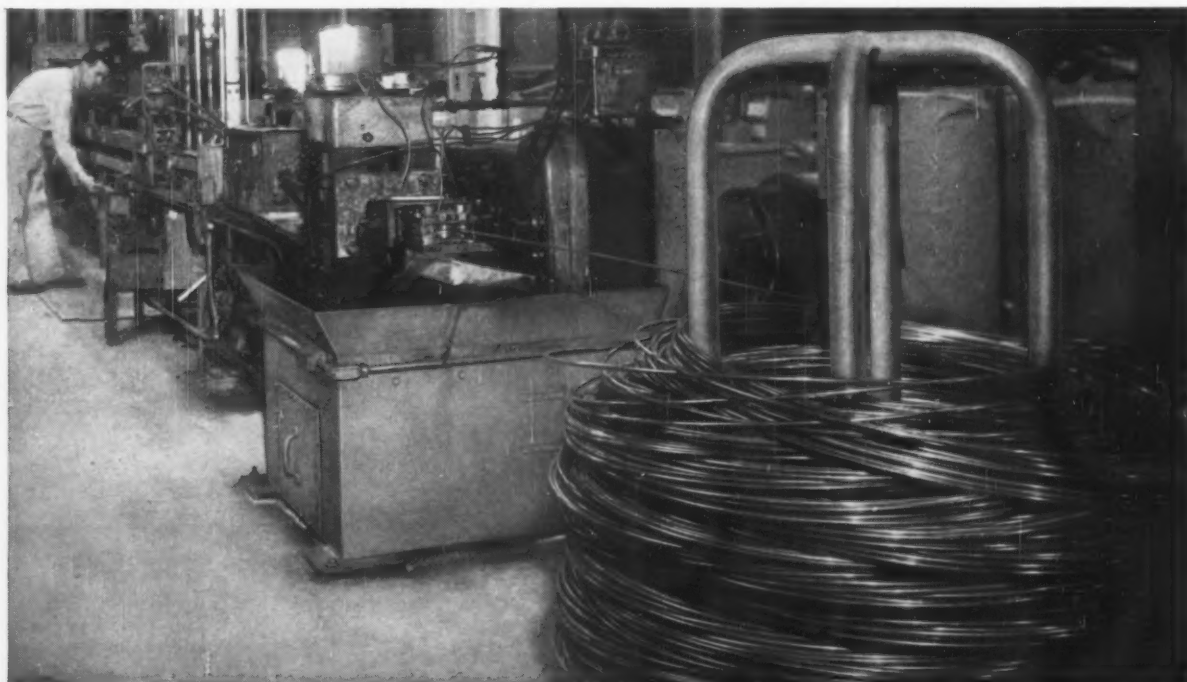
80% Less Scrap Loss—"Waste is an important consideration because we lost several feet every time we changed coils. Now we use only one and one-third CF&I Spiders each shift—instead of the eight or ten coils used previously—and have cut our waste 80%."

Increased Safety—"With small coils there was always the danger of the finishing end springing loose while rotating

and striking equipment and personnel. With heavy-weight CF&I Spiders which revolve on a turntable while our machine withdraws the wire, the finishing end is securely anchored, reducing the possibility of tangling and eliminating this danger."

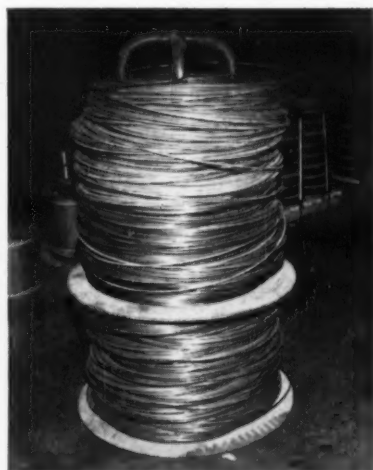
Improved Quality of End Products—"Since we do not have to reset the machine ten times a shift, the quality of our product is more uniform and we have fewer rejects," declared the superintendent of production. For a continuous operation, the end of one Spider can be butt welded to the start of another.

Reduced Handling Costs—"These sturdy Spiders have reduced our handling and storage problems, because each



INCREASE PRODUCTION 25%, CUT MANUFACTURING COSTS

At Bridgeport Brass Co., Flemington, N. J.



Spider contains as much wire as eight small coils. Unloading is safe and quick—one man with a fork lift can do the job easily, freeing several men for other important operations," Mr. Mangold pointed out.

Simplified Inventory Control—No need to sort through piles of wire coils...simply count the number of upright Spiders.

Save Storage Space—Spiders are stored compactly, requiring much less space than cumbersome coils. For maximum economy of space, Spiders can be doubled-decked which is equivalent to stacking 20 mill coils of 300 lbs.

Every CF&I Wire package offers one or more of the following benefits:

- Reduced downtime through extra long continuous lengths of wire
- Simplified inventory control
- Fast, economical unloading and in-plant handling
- Continued cleanliness of the wire

A CF&I representative will be glad to discuss your operation with you and recommend the wire package that will help save you time and money.

CF&I-WICKWIRE WIRE

THE COLORADO FUEL AND IRON CORPORATION



In the West: THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Farmington (N. M.) • Ft. Worth • Houston • Kansas City • Lincoln • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Wichita

In the East: WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia

CF&I OFFICE IN CANADA: Montreal

CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg

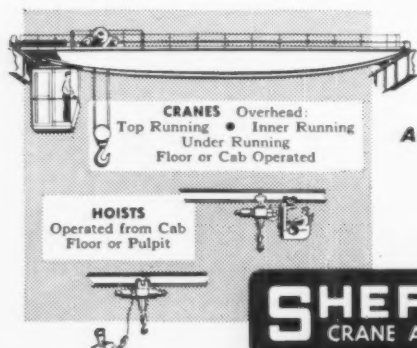
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Since 1903**

SHEPARD NILES
CRANE AND HOIST CORPORATION

1484 Schuyler Ave., Montour Falls, N. Y.

(Continued from P. 66)

Jonaus and W. N. Slaybaugh, appointed project engineers, tools and maintenance department.



W. M. Cree, elected vice president, sales, Edgewater Steel Co., Pittsburgh.

Huntington Alloy Products Div., The International Nickel Co., Inc.—**W. C. Norton**, appointed manager, technical service, Sales Dept.; **L. H. Martin**, appointed special asst. to the general sales manager.

Bridgeport Rolling Mills Co.—**A. S. Selle**, named chief engineer.

Lindberg Engineering Co.—**J. R. Gorey**, named administrative assistant to general manager, Western Div.

Orr & Sembower, Inc.—**R. C. Currie**, elected vice president and marketing manager.

National Can Corp.—**J. B. Facchin**, appointed division controller, Pacific Div.

Wyckoff Steel Co.—**N. A. Robinson** and **W. A. Thompson** named assistant vice presidents.

Chromium Mining and Smelting Corp.—**F. E. Brown**, appointed sales manager, Eastern Div.

Bethlehem Steel Co.—**J. C. Smith**, appointed assistant district manager of sales, Pacific Coast Div.

Standard Tube Co.—**P. J. Selinger**, named manager of product development.



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"Ermeto Fittings Save \$2000 Worth of Maintenance Labor Annually"

brass FITTINGS

1/4" to 1" sizes for pressures up to 5000 p.s.i. Approved by U.I., A.G.A., A.S.M.E., A.S.A. and S.A.E.

S.A.E. 45° Flare Compression Selfalign[®] Threaded Sleeve Inverted Flare Pipe



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For flare and flareless pressure connections. Sizes 1/4" to 2" in carbon or stainless steel for pressures to 10,000 p.s.i.

Ermeto Flare-Twin S.A.E. 37° Flare Pipe



bulk hose

Twenty different styles available. From 1/4" to 2" O.D. for working pressures up to 10,000 p.s.i.



hose assemblies

Completely fabricated with permanently attached swaged ends. Any size, any quantity for working pressures up to 10,000 p.s.i.



reusable hose ends

Designed for fast assembly and positive, leak-proof performance under high pressures.



tube working tools

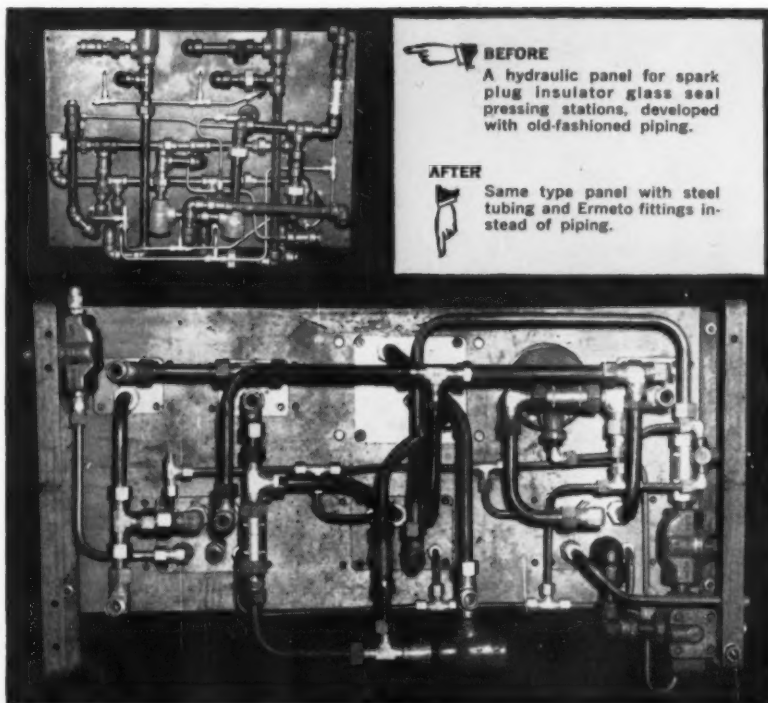
Designed for fast, accurate fabrication of all types of tubing layouts.

Tube Cutters
Tube Bending Springs
Mechanical Benders
Flaring Tools
Swaging Tools



Write for new general catalog—contains complete data and specifications for all items.

Screw machine parts made to your specifications... any machinable material. Write for information.



BEFORE

A hydraulic panel for spark plug insulator glass seal pressing stations, developed with old-fashioned piping.

AFTER

Same type panel with steel tubing and Ermeto fittings instead of piping.

Idea submitted by:

William T. Bayley
A.C. Spark Plug Division,
G.M.C.
Flint, Michigan

much neater installation operating at smoother and cooler rates.

"Ermeto fittings were selected because they were proved best from our tests. The superior grip on the tubing by Ermeto fittings survives shock and vibration, resulting in fewer leaks and less maintenance."

"The savings in maintenance of the six units after repiping amounts to approximately \$2000 a year. This is chiefly in labor."

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Ermeto hydraulic fittings are unmatched for positive high pressure control. Available in stainless or carbon steel with "Weathercote" or Cadmium finish in 1/4" to 2" sizes.

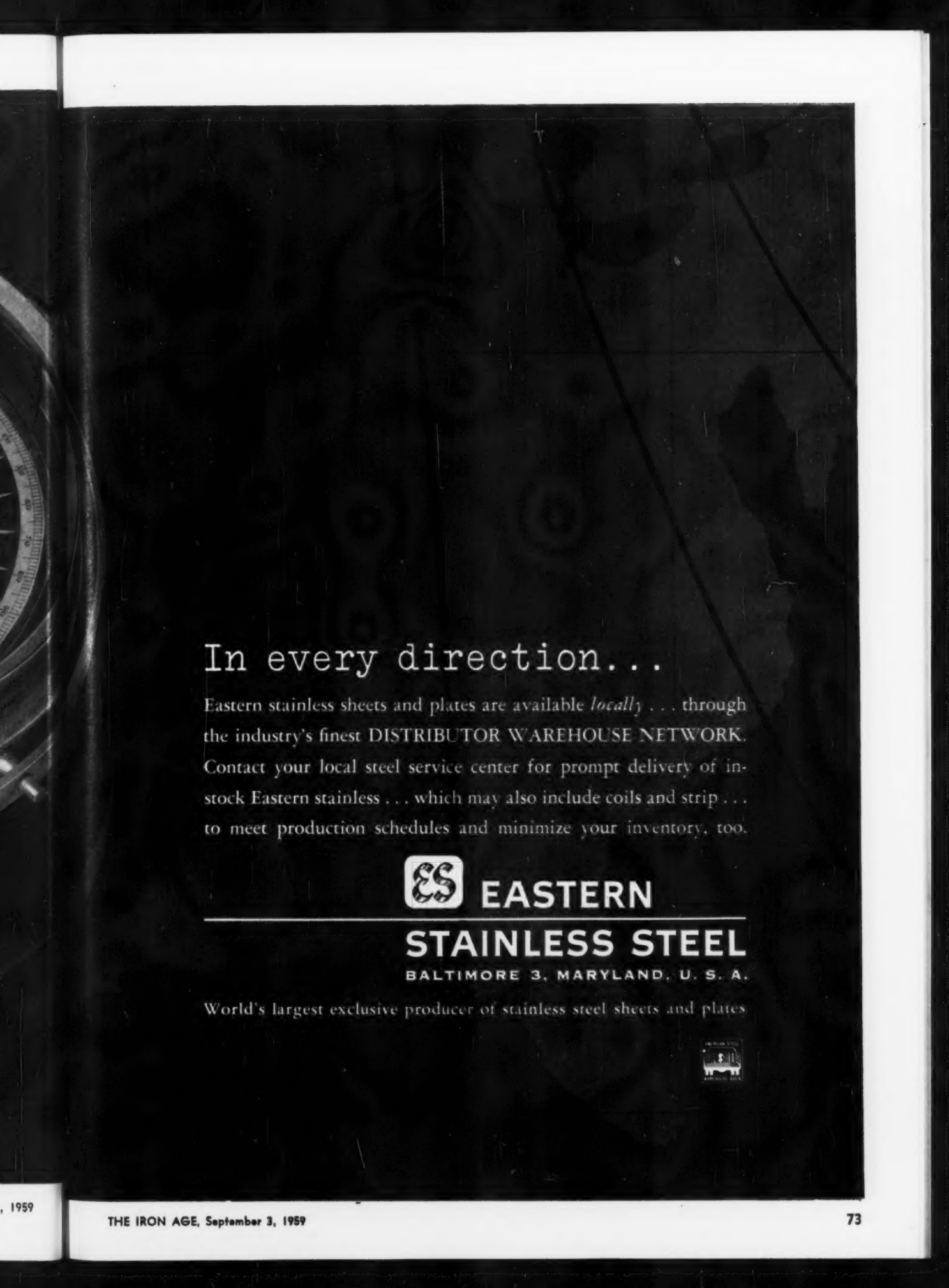
BRASS & STEEL FITTINGS / HOSE & ASSEMBLIES / TOOLS & ACCESSORIES



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Dept. IA-9, 128 W. Washington Blvd., Fort Wayne, Ind.
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MARINER'S COMPASS, patented 1835 by Jonathan Ball, courtesy of The Smithsonian Institution



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EASTERN

STAINLESS STEEL

BALTIMORE 3, MARYLAND, U. S. A.

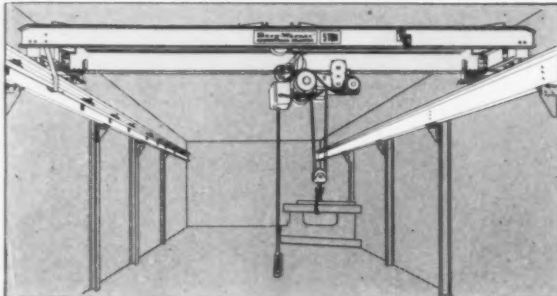
World's largest exclusive producer of stainless steel sheets and plates



Borg-Warner INDUSTRIAL CRANES

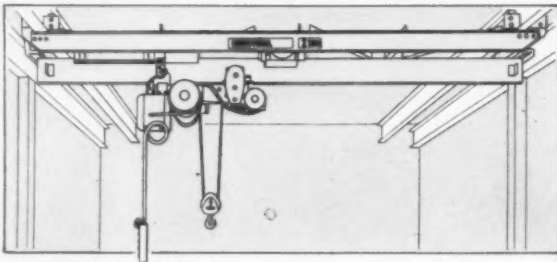
Interchangeable, standardized components give you top value in every type, every capacity...

The widest use of standardized sub-assemblies and components gives you more crane, more performance and greater dependability for a smaller investment when you choose a crane by Borg-Warner Industrial Cranes. You may be most pleasantly surprised when you learn how little a quality crane costs from Borg-Warner Industrial Cranes. Ask for an estimate without delay.



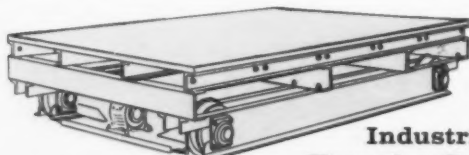
N-TRMD Top running, single girder motor driven crane with outrigger.

An excellent value and a top performer. Uses monorail hoist. Capacities up to 10 tons.



N-UHMD Under hung motor driven single girder crane with outrigger.

Available in capacities to 10 tons and spans to 50 feet. These smooth operating, rugged cranes are ideal where building structure will support the weight.



Industrial Transfer Cars

Design it better...

Make it better.

Designed for rugged service, with air or electric power. Available in a wide choice of capacities and designs.

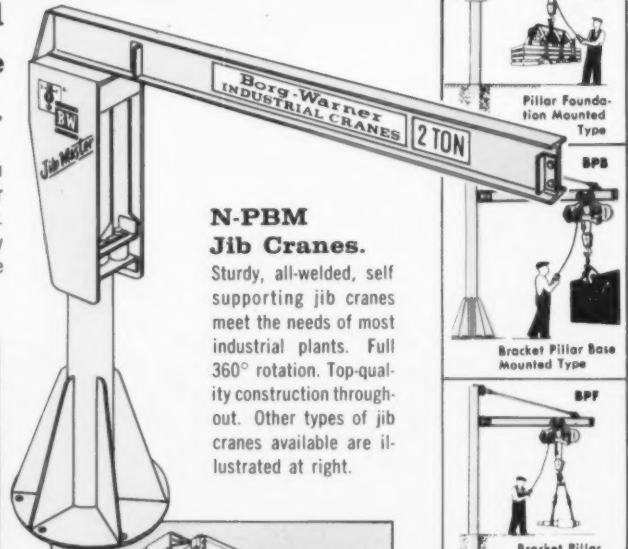


Borg-Warner Industrial Cranes also designs crane equipment for HEAVY INDUSTRY, constructed to specific requirements and to Association of Iron and Steel Engineers specifications for steel mill cranes.

Borg-Warner® INDUSTRIAL CRANES

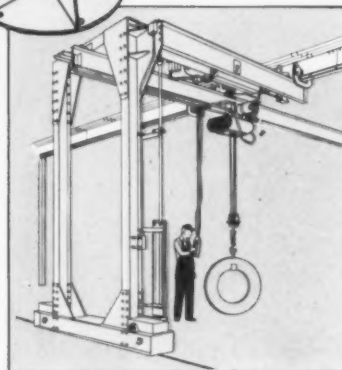
1510 S. PAULINA STREET, CHICAGO 8, ILLINOIS

Export Sales: Borg-Warner International, 36 South Wabash Ave., Chicago 3, Illinois



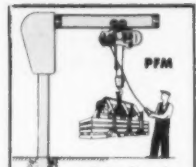
N-PBM Jib Cranes.

Sturdy, all-welded, self supporting jib cranes meet the needs of most industrial plants. Full 360° rotation. Top-quality construction throughout. Other types of jib cranes available are illustrated at right.

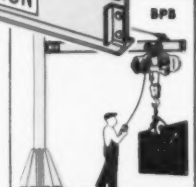


Semi-Gantry

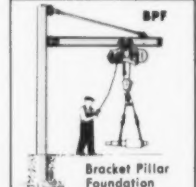
Special designs available utilizing standard components. Single girder capacity to 10 tons. Double girder to 20 tons.



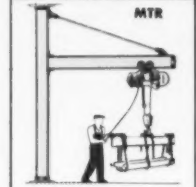
PFM
Pillar Foundation Mounted Type



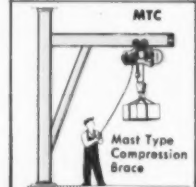
BPS
Bracket Pillar Base Mounted Type



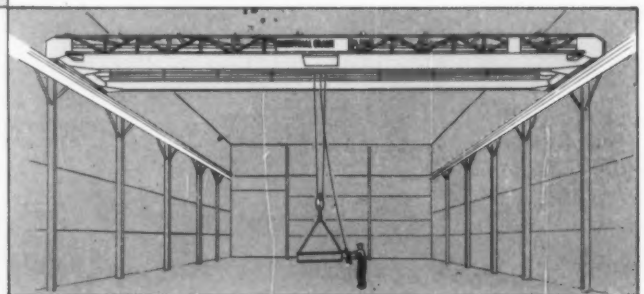
BPF
Bracket Pillar Foundation Mounted Type



MTR
Mast Type



MTC
Mast Type Compression Brace



N-TRMD-DG Top running, double girder motor driven crane with outrigger.

Capacities to 20 tons. Available in spans to 60 feet. Where service requirements are not heavy duty, these economical cranes built of standard wide flange beams are outstanding for service and reliability. Cab or floor controlled.



PATENT STUDY: Vice president engineering at Dura Corp., Ken Sward (left) reviews patent file with Dick Meyers, project engineer; Bill Stoddy, draftsman, and Ira Maxon, division chief engineer.

Patent Searches Pay Their Way In Design and Development

Why waste time, money and research brainpower when you can take full advantage of our U. S. patent system?

Patent searches can aid you in many ways in designing improvements and developing new products.

By R. H. Eshelman,
Engineering Editor

■ Patents can be valuable assets in more ways than generally known. Not only those owned by your company, but also all others in your

product field are vital to your business.

However, they're not static assets. They must be used constructively if you're to get the most out of them.

Basically, patents provide your products with unique features and definite advantages in competitive markets. Patents held by your company protect against inadvertent or deliberate pirating by competitors.

Gives Insurance—The insurance afforded for the substantial sums invested in development of new and better products and processes is vitally important, says J. Thomas

Smith, president of Dura Corp. (formerly Detroit Harvester Co.), Detroit.

"Almost equally important to us," he adds, "are the benefits we derive from the purposeful study of patents issued to other companies and individuals."

He points out that all patents, except those whose disclosure might injure the national defense, are open to inspection any time. It's this aspect of the services available from the U. S. patent system that too many companies overlook.

Creative Uses—When a company embarks on a major product im-

provement or new project, it makes good sense to assemble as much information on the subject as possible. Usual sources are textbooks, magazine articles, technical papers and other literature. Yet an even more valuable tool may prove to be a patent search.

For modest cost you can tap the biggest depository of engineering thinking ever collected in one location. Related patents reveal the current state of the art and its development.

Patent descriptions uncover major problems, show what solutions have been tried and may even point out some attempts that have failed and tell why.

These patent reviews can be a real stimulant to creative design thinking. Researchers at Dura say some of their most brilliant and original ideas have come to them almost out of the blue, after mulling over patent search files.

Saves Money—The patent search has valuable economic implications,

also. It reveals much about competition in a new and unfamiliar field; where it lies, how intense.

"For instance," says K. W. Sward, vice president, engineering, at Dura, "one division of our company recently was looking at electrically-operated antennas at a suggestion of its sales group.

"Patent research turned up the fact that the item is much more complex than appeared. It was blanketed with heavy patent coverage, with the two largest firms already locked in a legal battle to clarify rights.

"As a result of this patent analysis the project was shelved, saving considerable amounts of time and money that would otherwise have been poured into fruitless product development."

Buy or Make?—In other cases such an investigation may show it's better to buy a component than try to make it. Such was the case with a solenoid actuated, free wheeling nut, where it saves to buy.

Patent counsel for Dura, Maxwell Murphy, says that smaller firms need no large cash outlays to set up an effective patent program. Legal advice is available from competent Washington firms and in larger cities, when needed. Patent searches for specific devices may run from \$50 to \$150, may save many times that amount in development funds.

Dura has several divisions, is widely diversified in products: automotive hardware, window regulators and vent mechanisms, power lifts, frame assemblies for convertibles, farm implements and equipment, truck and tractor power take-offs, gear boxes, coolant pumps, die castings, permanent mold aluminum castings, power tillers, snow throwers, power lawnmowers and self-actuating contour beds.

To Meet Competition—Many of the products are highly competitive. Some 250 to 350 manufacturers are in and out of the power mower market. Between 50 to 100 of these have engineering departments, constantly generate new ideas.



PRODUCT DEVELOPMENT: Engineering research center translates new ideas into reality. Ken Sward and development engineer Robert Shelhart check out performance of mechanized push-button hospital bed.

The patent counsel's office circulates to engineers in these divisions pertinent patents. This enables them to keep abreast of developments, even those which fail to turn up at trade shows and in the literature.

Since it's the policy of some companies to withhold results of research until patent protection is obtained, material in the patent files may be both the first and only information available on a competitor's new developments.

Liaison Needed—Companies that have no full-time patent counsel need to establish a technical liaison point for an effective, continuing program. This might be one man in engineering who checks the Patent Gazette regularly; or an administrative person who's responsible for coordinating activities of an outside patent service, operating like a clipping bureau.

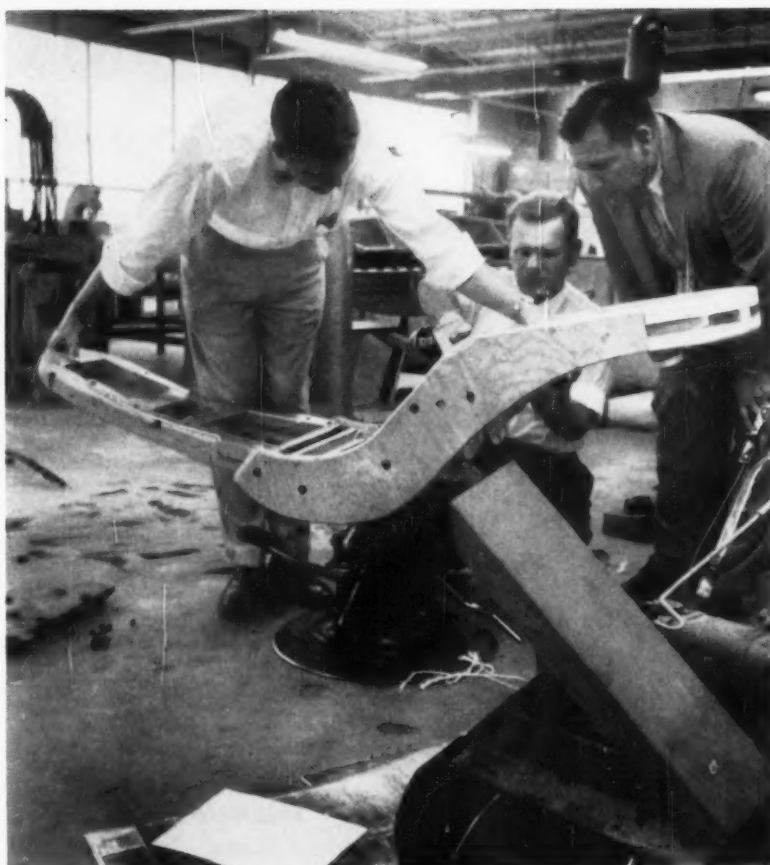
Such liaison is necessary to avoid duplication of effort, according to Murphy. Frequently the same line of development is proposed by different engineers at different times.

Unless there's one clearing house of information, you may have several searches made covering the same subject from time to time. Besides, he warns, to be really worthwhile, there must be a true continuity of effort.

Avoiding Waste Motion—Many classic and tragically comic examples show how individuals—and even companies—can squander large sums reinventing and perfecting devices thoroughly covered by well developed patents. One that turns up regularly in the automotive field is a steering device.

Basic steering mechanisms were perfected by a British inventor named Ackermann, whose patent was taken out in 1818. His was about the sixth so-called dead axle, invented to solve the problem of the swinging axle in the horse-drawn coach.

Another device currently popular with inventors is a throttle-holding system for use on turn-



IDEAS AT WORK: Engineers, stimulated by patent reviews, may come up with widely varied products such as this mechanized dental chair.

pike. If and when the public gives the nod to this accessory there will be a scramble among the wide range of devices available.

Check Expired Patents—Another prime reason for making patent searches is to take advantage of expired patents. Patent attorneys are fond of pointing out that there are many developments abandoned because they are ahead of their time.

Perhaps metallurgy, manufacturing or other technology was inadequate. Often ideas from an expired patent can be picked up, solving an urgent current design problem with little modification.

For product development, patents also offer a source of authentic field information. For instance in farm implements, patent applications frequently spell out service or other field problems not even suspected before.

Practical Clues—By scrutinizing solutions described in the patent the designer may come up with the answer to a related problem, or find a way to improve a different implement.

Engineers and designers also find that a survey of patents often gives them the clue to a more practical type of design. And from a business sense, when an organization seeks to diversify by acquiring new activities, patent surveys are useful in investigating a company's position in its field. Patent activity shows a company is forward looking and aggressive, doing development work.

Reprints of this article are available as long as the supply lasts. Write Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

Bearing Maker Builds New Home

Sharpens Precision in Processing Parts

Here's a way to produce ultra-precision bearings.

Start with a dust-free factory and pleasant air conditioning.

■ There's more than one way to skin the cat. If your present plant doesn't offer the best conditions for producing high-precision parts, then it's high time to build an annex. But, before you go ahead, talk to your own engineers to make sure that all production requirements are included.

That's exactly what Norma-Hoffmann Bearings Corp., Stamford, Conn., did. In fact, its own personnel not only designed the new building—they actually built it.

Now that the structure's up, it's said to house the most modern machinery, methods and instruments available to the bearings in-

dustry. Its present capacity is more than one million dollars in high-precision bearings annually.

The Air's Just Right—What makes this plant so special? For one thing, the building's air conditioned and humidity controlled. And not just for personnel comfort. These factors help prevent corrosion of parts during processing.

With this new setup, they can hold temperatures within one degree of 70°F and humidity between 45 to 50 pct. The new facility's sealed from the main plant by an air-lock anteroom. Inside, a glass and steel partition separates the grinding and assembly areas.

The new plant's outer wall contains green-tinted glass panels. And the windows are gasketed to keep out dust and hold down heat.

Now the Work Flows—It's pretty obvious that conditions have to be just right when you get involved with precision grinding, lapping, and honing. For, when Norma-Hoffmann did this work in the main building, it had trouble maintaining work flow. Human errors would often occur whenever operators shifted from one tolerance to another.

In their new surroundings operators can now meet those tough specs for high-grade bearings. They can do turning on multi-spindle screw machines, soft face grinding, and identification stamping.

Complete With Utility Room—A unique subsurface utility room contains central electrical controls, coolant purification, and temperature control for all machines. Then there's a cyclone-type classifier that



DROPS THEM IN PLACE: High-frequency induction heater expands the outer ring just long enough for the inner ring, balls, and retainer ring assembly to drop into place, giving high radial load capacity.



SPECIAL HONING: The company developed its own ball-track honing machines to give bearings finer surface finish, thereby reducing the noise level. It also insures lower starting and running torque.

removes coolant impurities right down to 3 microns in size.

You'll also find a package chiller that controls temperature consistently within 2° of room temperature. Of course, that cuts down on thermal expansion during machining.

No Accidents Here—It's only natural that all the equipment and operations be just as precise as possible. For example, the company has designed a new universal preload grinding method to prevent accidental over-grinding. And the unit's equipped with automatic in-cycle gaging.

As far as in-process inspection's concerned, it's done at every machine to measure work to a precision of 0.0000025 in. Norma-Hoffmann has also designed a honing machine to produce fine surface finish on inner and outer races. This unit not only reduces noise but aids lower starting and running torque as well.

Centerless Grinding—The company uses a centerless internal grinder to cut down on the number of per-part chuckings. On this unit, a special fluid-pressure clamping device holds the work against a rotating backing plate without even distorting the race.

Headaches in any precision work, dimensional stability and hardness, make no headway in this plant. Deep freezing of stock after heat treatment controls these problems.

The bearings that Norma-Hoffmann's making in the new facility are the angular-contact type. They meet ABEC-5 and 7 standards in extra-light, light and medium series. These bearings either have 25° standard-contact or 15° low-contact angles, all in 14 sizes.

Rosy Future—Norma-Hoffmann expects big things from this market for high-precision bearings within the next few years.

Greater demand seems imminent in precision machine tools, aircraft auxiliaries, woodworking machinery, computers and memory devices, and high-speed gear trains.



GRINDS THE RACES: Centerless internal grinder brings inner and outer races up to spec. Fluid-pressure clamping device holds big workpieces against rotating backing plate without endangering its shape.



PREVENTS ACCIDENTS: Final preload grinding by rotary surface grinders prevents over-grinding. The unit's automatic in-cycle air gaging measures the ground face height above the chuck with each table stroke.



FULL SUPPORT: Phenolic-impregnated kraft honeycomb supports entire surface, prevents buckling and dents.

Cellular Core Panel Structure Upgrades Steel Doors

By W. M. Leeser—Chief Engineer, The Steelcraft Manufacturing Co., Cincinnati

Metal doors have to be tough. They go mostly into commercial or public buildings, where they get constant use or abuse.

A new honeycomb design with kraft fibers stands the service.

■ At first glance, it might seem that something as simple as a door would long since have reached its final state of development. True, there are always new designs to meet special needs. But how far can one go in finding better ways to form a flat metal box?

Steelcraft engineers found the an-

swer in the realm of materials. After two years of study and development, the company has converted all its hollow-door lines to sandwich construction with kraft honeycomb cores.

Opens New Vistas—The result is a much sturdier door, one with higher resistance to flexing and impact. It's a better looking product because there's no tell-tale evidence of internal stiffeners. The cellular core serves as insulation. It deadens noise and does away with the hollow ringing sound typical of metal doors.

Besides vast improvement in the

company's established lines of doors made up of stiles, rails and center panels, the honeycomb system also proved the basis for an entirely new line of fully flush seamless doors.

Its new H-18 series puts Steelcraft in competition with so-called custom hollow metal doors; this type enjoys about 85 pct of the \$230 million annual steel door market.

Search for Adhesive—While the honeycomb-core method has become well established in aircraft and other structural uses, this is its first application in the steel door

field. The switch wasn't as simple as it sounds.

It meant sweeping changes in design and assembly techniques. Tolerances are tighter. New stress has been placed on quality control. The search for the best adhesive took a year.

All this has brought about more than a better product. As a result of its thorough analysis, Steelcraft redesigned much of its plant layout. Door production has been stepped up to about one a minute. To keep pace, the door frame line has also been modernized. Instead of press-forming individual pieces, coil stock is now fed through a 12-stand Yoder to roll-form the basic hat-shaped section; a flying shear cuts the frame parts to length.

Use Fast Handling—Where there used to be a lot of manual handling, most of the work is now moved on pallets and conveyors. Door piece parts are sheared right in the receiving room where the many sizes and gages of steel are close at hand. A 10-ft Cincinnati shear handles stock up to 10 gage; larger parts are sheared on a 16-ft Cincinnati which takes plate to 3/16 in. thick.

Lock and hinge openings, special holes and other small operations are done on six punch presses; one is a 40-ton capacity unit while the rest are rated at 50 tons. These are Bliss and L&J machines.

The forming department uses 12 brakes—a 45-ton Verson handling parts up to 8 ft long and 11 Cincinnatis ranging in lengths to 16 ft. A 180-ton Toledo press makes large cutouts, blanks center panels and forms integral louvers.

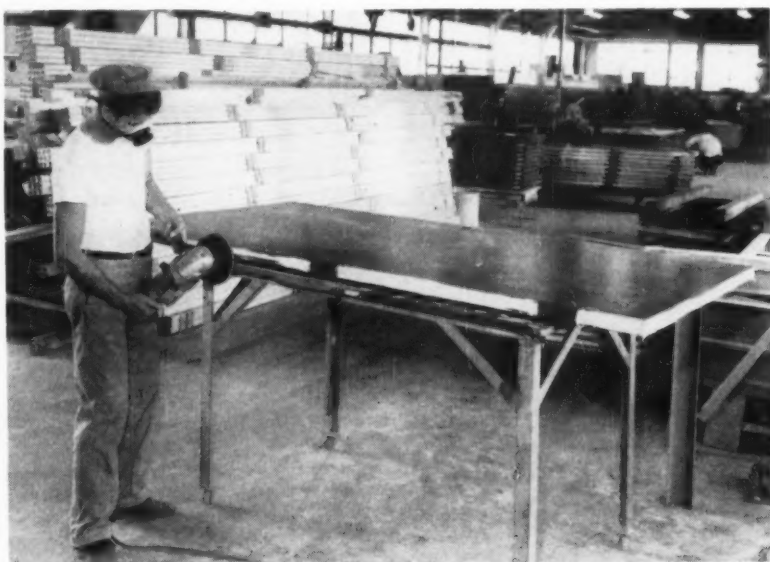
Divides and Reforms—At this point the hollow-core door line splits three ways. Panel parts go through the honeycomb operation, rails and end-closure channels move ahead to await final assembly, and stiles are sent to a welding operation for installing lock and hinge reinforcements. The latter are put in with a 125-kva Taylor Winfield projection welder. It makes eight simultaneous welds in a single cycle.

In the honeycomb department, panel halves are first sprayed with an epoxy adhesive. The core material—a tough, cellular structure of kraft impregnated with phenolic resin—is placed in one half; then the second facing goes on and the completed sandwich moves out on a palletized stack.

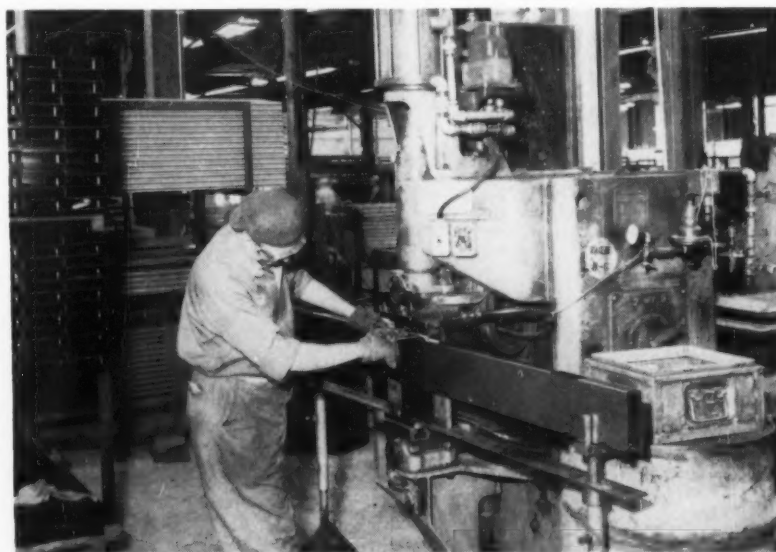
Final assembly is largely a matter of slipping various combinations of rails, stiles and center panels to-

gether like pieces of a puzzle. Parts grip each other tightly by means of full length mechanical interlocking.

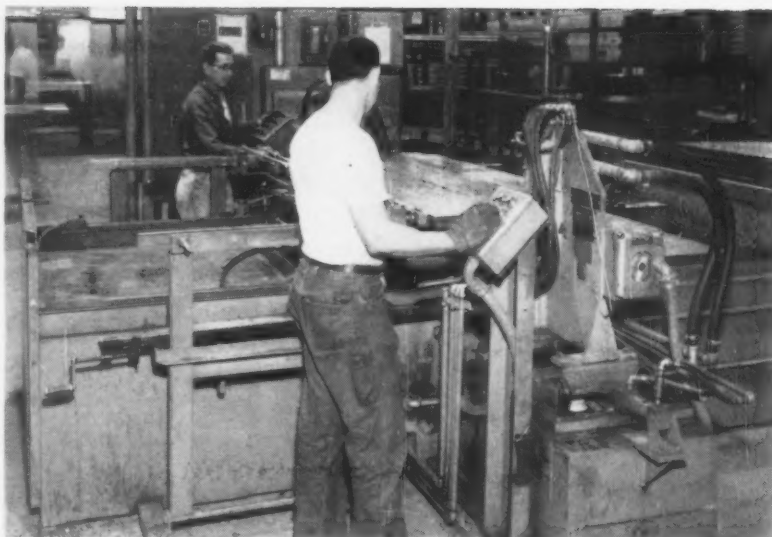
Special Welder—Lateral rigidity, tightness and added strength are furnished by the end-closure channels. These are put in on a special spot-welding machine designed and built by Steelcraft. The unit is actually two machines—one for each end of the door. It employs two 45-kva



INVISIBLE JOINT: After tack welding, joint between door halves is filled with polyester resin and ground smooth to form invisible joint.



MULTIPLE WELDER: Taylor Winfield projection welder hits eight spots at a time to install hinge reinforcement in box-shaped stiles.



FINAL CLOSURE: Final-assembly welder completely welds door top and bottom, front and back, in one pass. It's an automatic cycle.



INCREASE OUTPUT: Honeycomb core system speeds production, allows greater variety in standard lines. It means quick delivery from stocks.

transformers and heads made by Federal Welder.

Since the channels are welded to both faces of the door as it lies flat, each gun floats top and bottom. The door is completely welded, both top and bottom, front and back, in one continuous pass.

The cycle takes about 50 seconds for the average-width door, spacing

welds 2½ in. apart. This means a total of 48 welds in less than a minute, and it's all automatic.

Next, assembled doors are inspected and edges ground smooth where necessary. Then they go through a five-stage Bonderizing system and finally receive a baked-on prime coat of paint.

New Door Differs—The new

H-18 series doors start as two shallow pans of 18-gage steel. After the honeycomb core is bonded between them, intermittent welds are made around the edges to hold the pans in alignment. Then the joint is filled with polyester resin and all edges are ground smooth.

Exceptional evenness is a prime feature of doors made in this way. Adhesive bonding keeps the steel facings perfectly flat, so there can't be any buckling. And since there's no welding of internal stiffeners, there are no spots or heat-distorted areas to mar the surfaces. Despite its simple construction, the new seamless door is many times stronger than intermittent-girder types.

High impact resistance is another feature of the new H-18 line. The small honeycomb cells support the entire surface to prevent denting.

Withstands Rugged Tests—That the doors hold together and keep their shape was proved recently in trials at Pittsburgh Testing Laboratory. To check twisting, a door was suspended horizontally with three of its corners clamped securely to upright columns; then weights were placed on the unsupported corner. With a load of 400 lb., deflection was less than ½ in. Permanent deformation after the weights were removed ran less than 3/32 in.

A slam test was set up in Steelcraft's own laboratory. The door was slammed 226,500 times with a force of about 30 lb. While rubber bumpers in the frame had to be replaced four times during the test, the door remained completely undamaged, inside and out.

A less formal test involved driving a truck over one of the new doors. It came through unscathed.

The honeycomb system is fast and flexible. This permits Steelcraft to offer architects near-custom design freedom in a wide range of low-cost standard items. Doors and frames are made in many styles and sizes, with a variety of lights, louvered vents and other features.

Hard Surfacing Strikes Back

Fights Battle Against Wear on Blast-Furnace Parts

Blast-furnace charges can play havoc with bells and hoppers.

Give these parts new surfaces and they'll act like new.

■ You can get more rapid melting, faster production and increased capacity in your blast furnace by just adding a few extra pounds of gas pressure inside the big units. How can they take this pressure? Let hard surfacing give you the answer.

In the past this welding technique has given many parts the traits to stand up to the punishing effects of abrasion, impact and erosion. Now it's being used at Pittsburgh Engineering and Machine Div., Pittsburgh Steel Foundry, to fight similar wear problems on worn furnace bells and hoppers.

Weld deposits from two special alloys also protect the parts from thermal shock, evident when the same parts are washed with water. Hard surfacing is also stemming the tide against corrosion and wire-drawing action caused by gases in the furnace atmosphere.

Pressure Jump—With the new surfaces, blast-furnace pressures can now climb to 12 lb. At the same time, temperatures remain in the 400° to 500°F range.

There's a bell and hopper system at the top of the Pittsburgh blast furnace. It's used to allow loading and to prevent escape of gas. The 12-ft high bell and 10-ft high hopper, both 15 ft in diam, catch the charge from a smaller but similar setup above them.

After receiving the evenly distributed materials of ore, sinter, limestone and coke from the smaller assembly, the big bell opens. This permits charging while pressure is maintained throughout the sequence.

Buildup Comes First—But before the alloys are deposited on the carbon-steel bell, the outer surface requires a ½-in. buildup with mild-steel filler wires. In the next step you can use standard submerged-arc welding equipment to handle the coils of Hascrome (iron-chrome - manganese) and Haynes 64 (nickel-chrome-moly) surfacing wires.

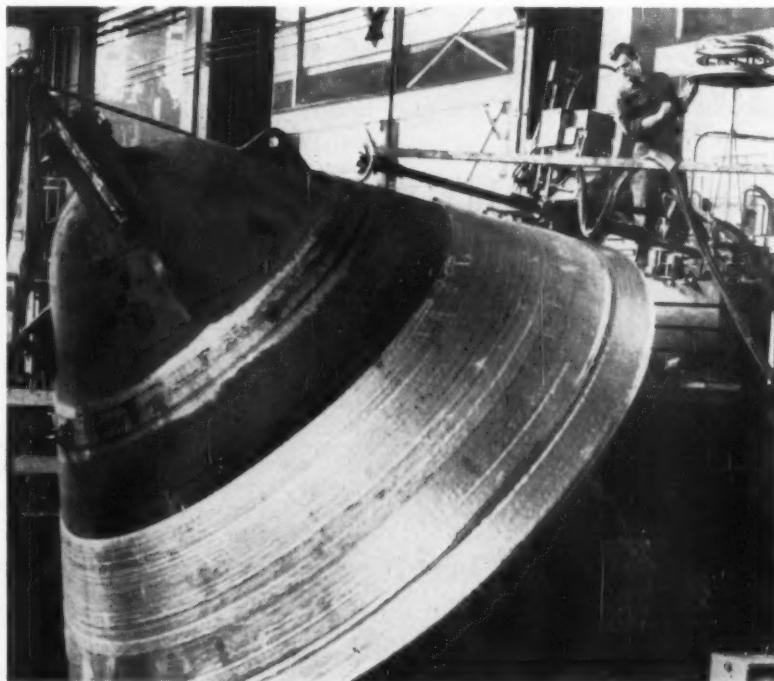
The protective deposit covers a total area of 150 sq ft. The upper 2 ft of the 4-ft band is a ¼-in. thick layer of Hascrome, while a deposit of the same thickness of the other alloy takes care of the lower half, right down to the lip.

Grind It Smooth—It's necessary to machine and grind 3 in. of the lip deposit, however. This takes in the seating area that comes in contact with the hopper.

And the same must be done to 3 in. of deposit on the hopper lip. This is also alloy 64. The rest of the 170-sq-ft deposit on the hopper's inner surface is a ¼-in. thick, 40-in. wide layer of Hascrome.

Over a Ton of Wire — Welding speed along the ¼-in. wide pass is about 20 ipm, using 400 to 425 amp, and an average of 30 v. Pittsburgh Engineering and Machine bought the hard-surfacing coils from Haynes Stellite Co., Div. of Union Carbide Corp., Kokomo, Ind.

Both grades are 3/16-in. diam drawn tube rod, consisting of 1897 lb of Hascrome and 960 lb of Haynes 64. And what service life will they give? On a full high-pressure production campaign, the rebuilt surfaces should cushion more than one million tons of ore.



PROTECTS SURFACE: 15-ft diam bell gets alloy deposit in critical 150-sq-ft area. In service, it faces abrasion, impact and erosion.

Hot Strip Mill Plans Underway

Hot strip mills that were up to date 20 years ago are being greatly overloaded with today's varied demands.

Here's how industry plans to take advantage of new developments in equipment and methods.

By G. J. McManus,
Pittsburgh Regional Editor

■ Before they're through this time, steelmakers will spend a half billion dollars or more to replace, modernize and add hot strip mills.

Three new hot mills were started up last year. Four major projects have been announced since February. At least two more big installations are coming up. New control systems are being tried. Coilers, tables and other auxiliaries are going in on a wide scale.

A complete hot strip mill costs about \$50 million. You can save \$5 million by going to a reversing rougher instead of a roughing train. You can spend \$1 million for automatic controls alone.

Why the Spending?—Steel producers are putting up this kind of money for three reasons:

First, attrition cycles had run out at many locations. Twenty-six hot strip mills date back to the thirties and twenties. Eleven of these had not had major revamping for more than 20 years.

Secondly, the need for more tons and bigger coils left older mills badly overloaded. And thirdly, new control techniques offer important quality gains. Customers and competitors are forcing tight quality standards on stainless producers.

Twenty years ago, 3500 hp was considered ample for a finishing stand of a hot mill. A large coil might weigh 20,000 lb. Slabs might go up to 5 in. thick.

Boost in Power—Today, U. S. Steel's 80-inch mill at Fairless has 5000 hp on individual finishing stands. It will turn out coils up to 27,000 lb.

At Campbell works of Youngstown Sheet & Tube, a \$50 million modernization program is equipping a hot mill to produce coils up to 48,000 lb.

Granddaddy of them all will be the 80-in. mill planned by National Steel for its Great Lakes operation. National is talking about a mill that will roll 30-ft slabs into

75,000-lb coils at speeds up to 3000 fpm. Individual finishing stands will have 8000 hp on them.

The buildup indicated by these figures has pushed older mills past their designed limits. In the old days power requirements were figured with the understanding that motors would be idle about half the time and could be loaded up to 150 pct of rated capacity.

Demands on Motors—As slabs grew thicker and longer, they tended to run together on finishing stands. Motors are worked constantly with heavy overloads. Breakdowns and maintenance costs increase. There is no power reserve left for control manipulation.

In stainless production, the power deficiency creates quality as well as volume problems. Electrical men say hard stainless grades need 70-125 pct more rolling muscle than carbon steels.

With plane makers calling for flatness down to one-quarter commercial tolerances and with individual producers advertising sheets rolled to one-half AISI allowances, mills have come under heavy pressures for new equipment.

Major Projects in New Construction Wave

In the late thirties, 14 hot strip mills were built. Now steelmakers are mount-

ing a new construction wave that may rival anything in the past.

	Mill size	Cost	Timing
Jones & Laughlin	44 in.	\$36 million	Jan. 58 startup
Armco Steel	56 in.	\$26 million	June 58 startup
Kaiser Steel	86 in.		July 58 startup
Youngstown Sheet & Tube	80 in.	\$50 million	Late 58 announcement
Great Lakes Steel	80 in.		Feb. 59 announcement
Ford Motor Co.			Mar. 59 announcement
Crucible Steel	56 in.	\$25 million	May 59 announcement
Republic Steel	56 in.	\$45 million	May 59 announcement

Horsepower per Inch—In June of last year, Armco Steel completed at Butler, Pa., what it calls the most powerful 56-in. hot strip mill ever built. The mill has 33,000 connected horsepower or 589 hp per in. width.

Crucible Steel has been hot rolling stainless on a four-high reversing mill. This has created surface problems, as strip is coiled after each pass. The operation is not designed for low-cost volume production.

On May 4, Crucible announced a \$25 million financing program to cover a 56-in. hot strip mill at Midland, Pa. The mill will have five stands in tandem. Each stand will have 5000 hp.

Increase Hot Reduction—Apart from quality, the mill is expected to cut costs by permitting greater hot reduction than is now possible. At present, cold working starts with a strip 0.187 in. thick. The new mill will go down to 0.125 in.

About a week after the Crucible announcement, Republic Steel came out with plans for a new 56-in. hot strip mill at Warren, O. Expected to cost \$45 million the mill will roll aircraft stainless, as well as carbon steels.

Another aspect of quality is automatic control. This is just now coming into the picture for hot mills, but all new installations will be equipped and widespread adoption seems sure for existing units.

Automation Spreads—One control method being tried employs automatic screwdown at the intermediate finishing stands and automatic control of speed and tension at the final stands. A Swedish-developed unit is being used to indicate gage at the roll bite. X-Ray gages measure thickness after stands.

A system of this type has been operating for some time at the Provo works of U. S. Steel's Columbia-Geneva Div. General Electric supplied the control equipment.

Youngstown Sheet & Tube's new mill will be equipped for automatic

Compare Advances in Capacity

	Irvin (When Built)	Fairless	Current Thinking
Width, in.....	80	80	80
Stands			
Roughing.....	4 + scale breaker	5 + scale breaker	5 + scale breaker
Finishing.....	6 + scale breaker	6 + scale breaker	7
Power			
Roughing, hp.....	4 @ 3500/stand	4 @ 6000/stand 1 @ 3500/stand	5 @ 6000/stand
Finishing, hp.....	2 @ 4500/stand 3 @ 5000/stand 1 @ 2500/stand	5 @ 5000/stand 1 @ 4000/stand	5 @ 6000/stand 1 @ 5000/stand
Total.....	40,500	56,500	65,000
Slabs			
Max. thickness, in.....	7	9	9
Max. length, ft.....	18	20	26 to 30
Max. weight, lb.....	16,000	26,500	33,000 Depends on width
Coils			
Weight per unit width, lb/in.....	400	550	800 to 1000
Total weight, lb.....	15,400	25,000	32,000 Depends on width
Speed, fpm.....	2000	2200	2600
Controls			
Roughing.....	Manual	Manual	Manual
Finishing stands screwdown.....	Manual	Manual	Automatic
Speed/tension gage control.....	Manual	Manual	Automatic

screwdown and automatic tension control, along with added power. Westinghouse is supplying the electrics for this job.

Speed Response—Closely related to controls are improved power systems. On the newer mills, individual stands have their own power sources. This permits faster response.

Motor speeds are directly regulated and motors are held more closely to desired speeds than with voltage control. Finally, motors have enough power to handle loads.

There's no question but that automatic controls can improve the quality of hot bands and also finished coils. Cold mills cannot correct the gage jump you get when the heavy end of one band is welded to the light end of another.

Controls Are Costly—But there's

no question either that new controls are expensive. Complete systems run over \$1 million. If strain gages are used, mill stands must be carved out.

Card programming for strip mills is coming into the picture. Punch card controls will be applied to one roughing train. At Provo, screwdown controls have been consolidated in the pulpit and can be preset during the preceding pass.

But the most dramatic technical development will be the 80-in. mill for Great Lakes. The speed limit for strip mills has always been around 2200 fpm.

When you go much above that there is danger the strip will plane up as it leaves the final stand. Rolling mill men are wondering how this problem will be licked in a mill designed to approach 3000 fpm.

Bond and Sinter Non-Metals With Capacitor Discharges

By Dr. Daniel Schiff—System Management Subdivision, Raytheon Co., West Newton, Mass.

New bonding technique joins nonconductors with lightning-like speed.

And the same methods can be used for sintering too.

■ Ceramic bonding is now possible with capacitor-discharge heating. The same method also does quite a sintering job of materials under very high-temperature and high-pressure conditions.

For over a year now, Raytheon's been doing a lot of spadework in this area. And, finally, it's come up with a solution that promises to make itself felt, especially in the field of miniaturization.

Fills a Void—Capacitor-discharge bonding of ceramics fills a long sought void in joining. Attempts at doing this in spot weld-

ing were never successful, the materials being poor electrical conductors.

The new process opens up another field, too—the bonding of electrical leads to semi-conducting materials. Welding temperatures always had adverse effects on such materials. But, in capacitor-discharge bonding, the semiconductors undergo virtually no heat at all.

Lightning Speed—Even in this age capacitor-discharge heating is unusual. Consider the discharge and transfer of several Btu's of energy from their capacitor bank storage to a few hundredths of an ounce of material within a few millionths of a second. It's being done.

The electrical energy converts to heat within the material by making the material the most resistive part of the circuit. The material then goes through a fast temperature

rise before the heat has a chance to escape. Phase changes will occur as soon as enough energy's been converted to heat.

Turns to Vapor—In bonding, the capacitor discharge vaporizes a tiny amount of metal. This metal forms a mechanical, not electrical, connection between the nonconductors. It then absorbs electrical energy in heat form, but loses it to the bond pieces through conduction.

However, the bond pieces, unlike the metal, display very little rise in temperature. The final bonding action takes place when the metal vaporizes and condenses.

What Happens?—In bonding, forces applied by a vice press two bond pieces against opposite sides of a metal foil. Current passes through the metal foil only, not through the nonconducting bond

Thin Metal Foils Cause Materials to Bond

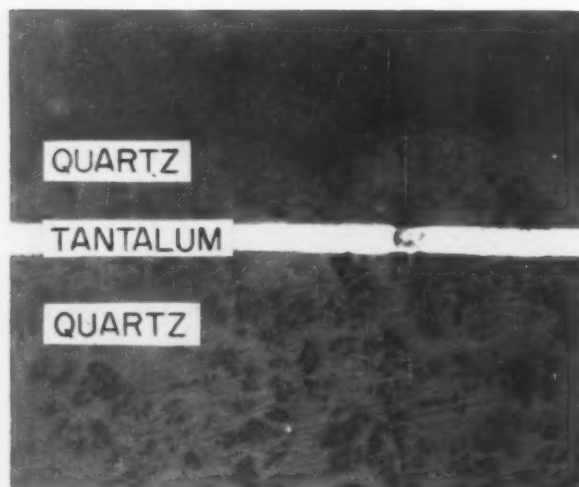


FIG. 1: In a quartz-to-quartz capacitor bond tantalum foil is only 0.001-in. thick.

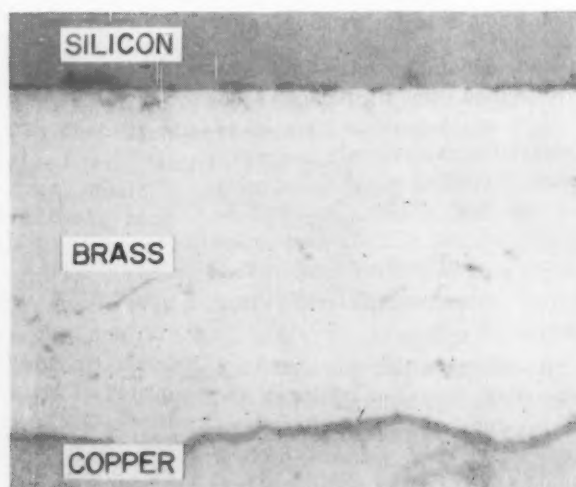


FIG. 2: Brass foil, 0.002-in. thick, plays role of metal conductor in silicon-to-copper bond.

pieces. That part of metal outside the bond area vaporizes and dissipates into the air. But the foil within the bond area creates the actual bond.

Electrical equipment used for the tests was a 2500-joule (2.5 Btu) capacitor bank. Rated at 80 microfarads and 8000 v, it's discharged by a spark-gap switch. And in these tests the condenser discharged in 0.000005 second with enough energy to vaporize one to two hundredths of an ounce of most metals.

Quartz-to-Quartz—You can see the results of bonding quartz rods with tantalum foil in Fig. 1. The white stripe in the middle is a cross section of the 0.001-in. thick tantalum.

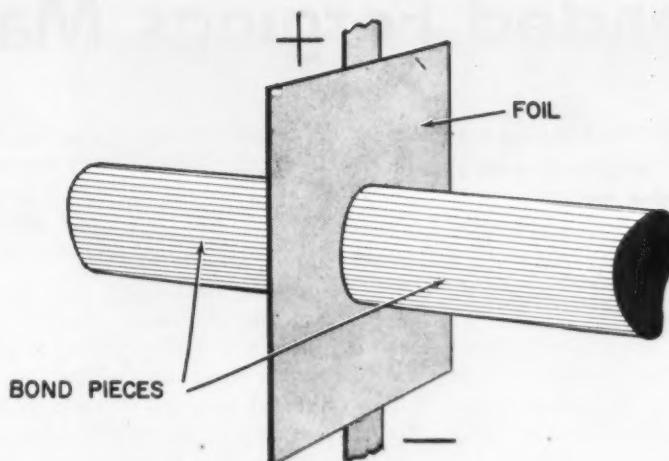
In this photomicrograph the tantalum's already vaporized and condensed, the bond being formed. The dark areas, above and below, are quartz. The butted ends on these 3/8-in. diam rods are flat and polished.

Results of a silicon-to-copper bond are shown in Fig. 2. Here the conducting metal is 0.002-in. brass foil. Only the silicon surface is polished. Once again the foil has already vaporized and condensed, completing the bond.

Sintering—This is another story. Since it's carried out under combined pressure and heat, you need a specially designed setup, like the steel bomb in the drawing. Cross hatching in the drawing indicates insulating materials. Also an alumina sleeve surrounds the plunger, pedestal and working volume.

By tucking the material in the working volume, you subject it to pressure. The capacitor discharge then passes through the material. It's the only conduction path between the plunger and the pedestal. As a result, the material's heated while under pressure.

Encased in a steel frame, the bomb measures 1 x 4 in. At Raytheon, powdered graphite was then placed in the working volume. Surrounding parts insured a close, but



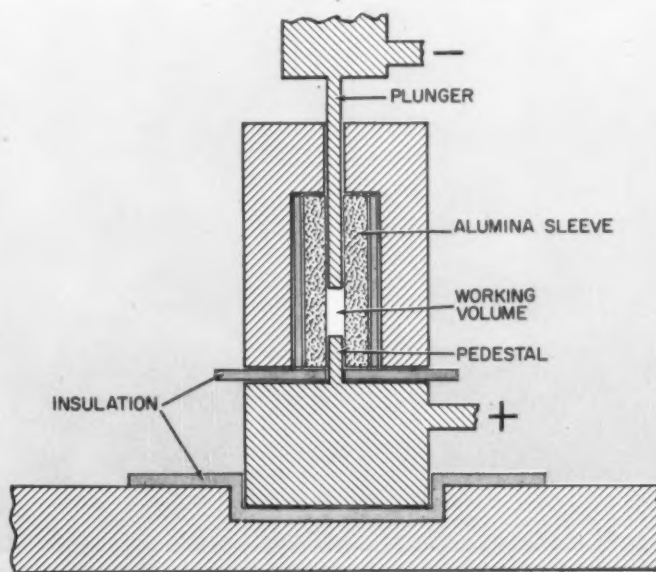
FOIL ACTION: Metal foil inserted between two nonconducting bond pieces acts as joining agent. High-speed current helps bond ceramics.

not gas-tight, fit to contain the graphite while under pressure. A small hydraulic jack was used to compress the plunger.

Graphite Changes Phase—After pressure on the graphite had built up to 100,000 psi, the capacitor was discharged. The speed of generated heat within the graphite was so great that a phase change took place, even before the heat had time to dissipate.

Graphite's solid-liquid phase is 7200°F in critical temperature and 1540 psi in pressure. The formation of small clinkers signaled the phase change. This occurred right after capacitor discharge.

Proved Their Point—Raytheon engineers weren't too sure of heating's role in this phenomenon, so they ran another test. This time they applied the 100,000 psi pressure only. No clinkers formed.



SINTER BOMB: Working volume area stores material to be sintered. With temperature and pressure, bomb discharges, causing phase change.

Leaded Forgings Machine Easily

Recent field studies prove that leaded forgings display superior machining traits.

■ Going back several decades, engineers started working on a method to add lead to steel. This, they knew, would make steel much easier to machine.

During its early research the main problem was one of dispersing the lead evenly throughout the steel. Finally, right after World War II, leaded steel hit the market in plate and bar-stock forms.

But Alco Products, Inc., was more interested in adding lead to steel forgings. And, before long,

its research group in Latrobe, Pa., developed Hi-Qua-Led, a new material available only in high quality forgings. The next step was to judge its performance under fire.

In the Field—And how does it perform? If case histories are any criterion, the alloy is doing a bang-up job. One manufacturer has cut machine time and tool life by 600 pct using leaded steel forgings. It used to take the company's King boring mill about 3½ hours to machine 1045 forgings.

Now, working on Hi-Qua-Led steel 10L45 forgings, the same boring mill completes the job in less than 30 minutes. Tools on the

boring mill last longer too. On leaded steel, they'll outlast regular steel 10 to 3.

Better Shear Angle—The addition of lead to steel has changed two of the old machining principles. First, it's increased the shear angle. This not only reduces the heat generated but also the force required for plastic flow.

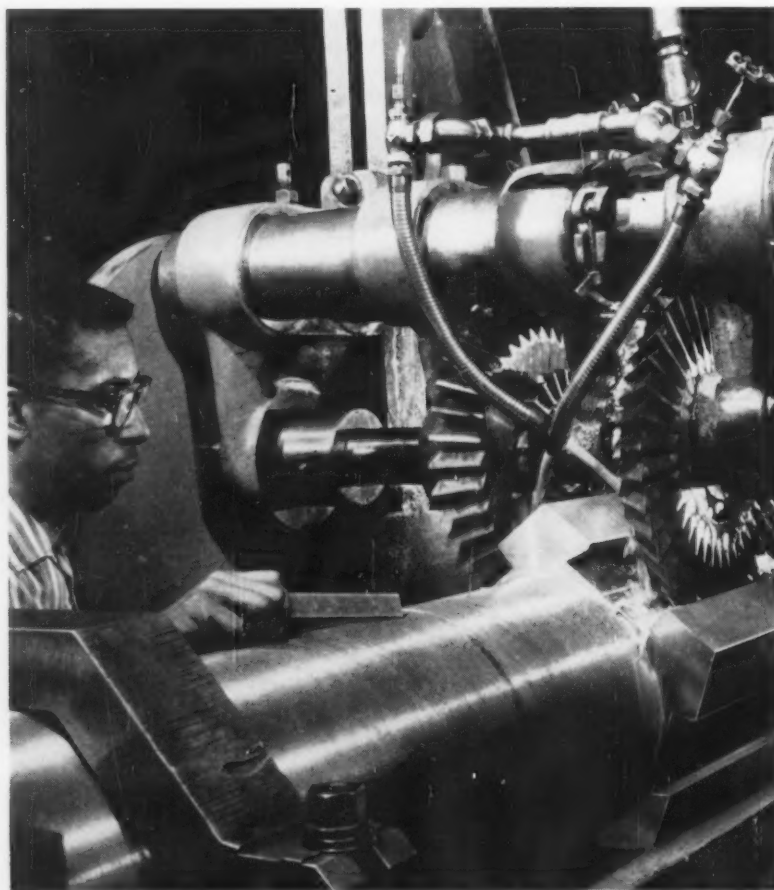
And secondly, lead additives have cut down the frictional properties of the chip flowing over the tool, once again generating less heat. But this factor also causes less chip welding, lowering the force requirement even more.

Can't Find the Lead—You can learn some unusual facts in the lab about leaded steel. For example, when you look for traces of lead in the alloy through an electron microscope of 12,000 power, you'll be in for a let-down. No lead in sight!

Look Them Over—A major tool manufacturer put 41L40 and 10L45 leaded steels through some exhaustive tests. Results revealed that 41L40 lasted 18 times longer than regular 4140. And 10L45 leaded steel gave tooling 100 times the wear received from regular 1045 steel.

This alloy not only offers lower machining and tooling costs but also maintains the same physical properties of regular steel of the same grade. About the only times the properties will differ, you'll find a definite improvement.

Alco produces both open-die and circular shapes in any steel grade. Sizes range from 1000 to 36,000 lb and 40 ft long in shafts and rectangular shapes. Forged and rolled rings run from 18 to 160 in. OD, while the mandrelled circular forgings are produced in an OD range of 24 to 80 in., with 60 in. widths.



MACHINES FASTER: Leaded steel forging cut straddle-mill dovetailing time by 71 pct. Overall reduction in machining time is one-third that of ordinary steel. This means greater tool savings.

SHAPE OF THE MONTH



CARGO CONTROL SYSTEM TRACK
BY

VAN HUFFEL

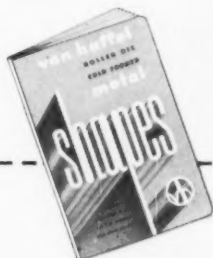
Where ideas  take shape

This track for shoring system in trucks, planes, etc. was produced for Aeroquip Corporation and is just one of many ideas Van Huffel roller die, cold forms in metal for a wide variety of industries. Your requirements may call for a more complicated shape. If so, you will be interested in these advantages of Van Huffel cold formed metal shapes: (1) Any of the common metals—hot or cold rolled steel, stainless steel, high strength steels, coated steels, aluminum, copper, brass—as well as painted or plated metals or bimetal sections can be formed in any lengths. (2) Structural sections have a high strength-to-weight ratio. (3) Parts can be fluted, seamed, notched, beveled, welded, punched, coiled, curved and embossed. (4) The finish of the stock is not marred. (5) Sections can be formed from metal strip 33" wide of uniform thickness up to a maximum of .312 gauge and a minimum of .003 gauge.

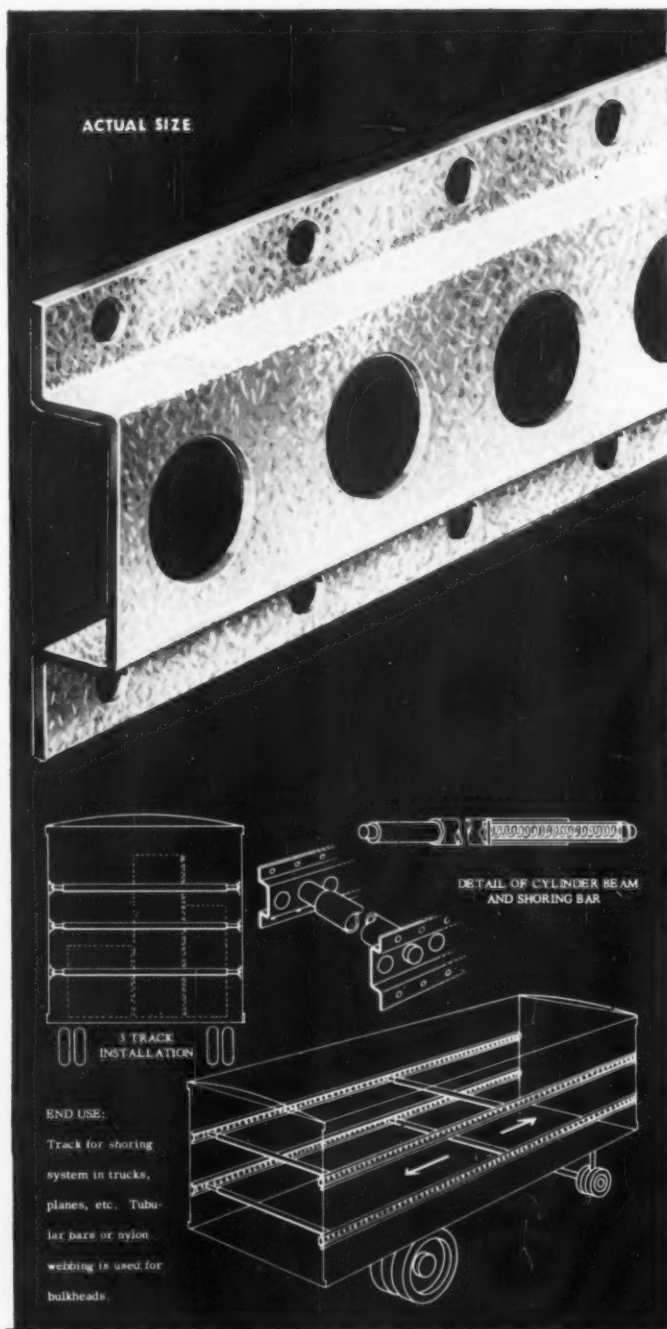
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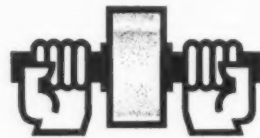
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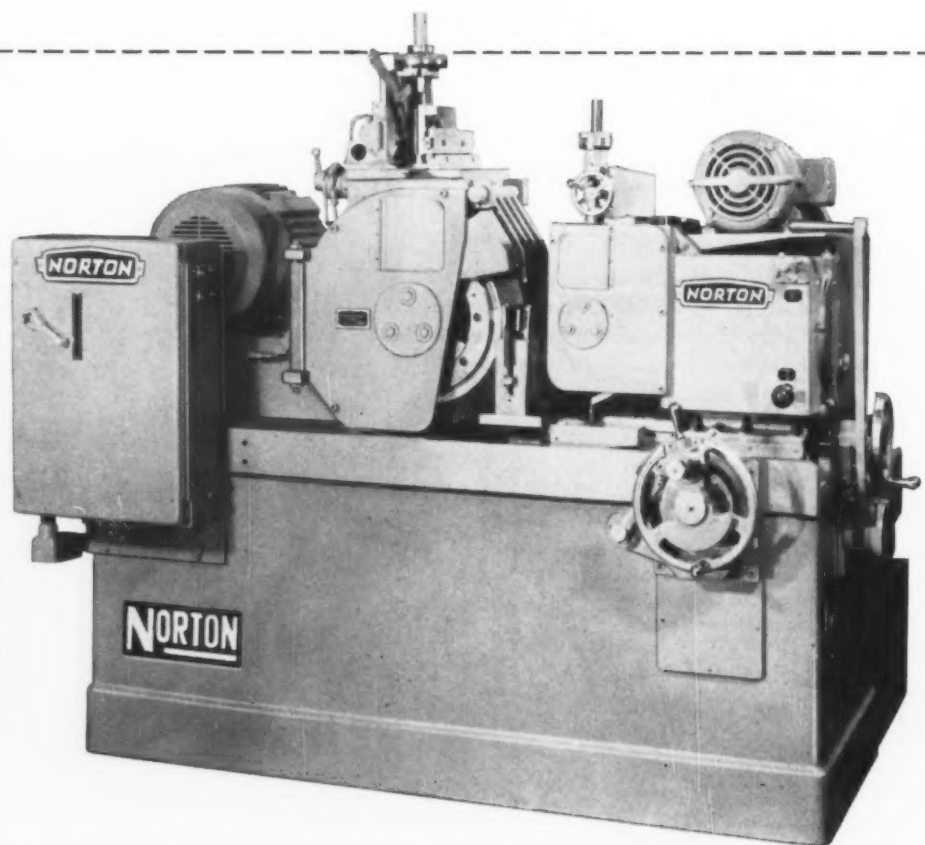
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3 MAJOR ADVANCEMENTS IN CENTERLESS GRINDING

accuracy . . . economy

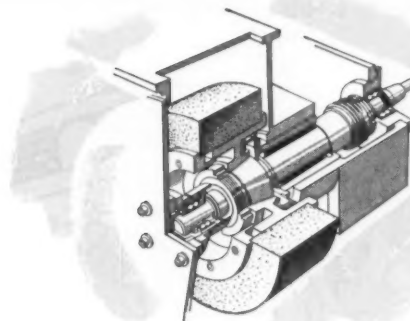
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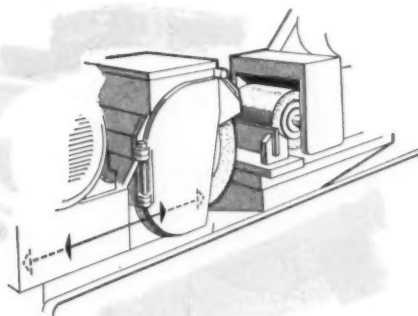
Many other features result in outstanding performance advantages. Call your Norton Sales Engineer, a trained expert in the grinding field, for consultation on how these features can benefit your production. Or write for Catalog 1328. NORTON COMPANY, Machine Division, Worcester 6, Mass.



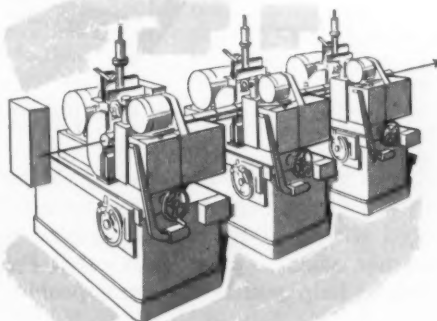
District Offices: Worcester, Hartford, Cleveland, Chicago, Detroit,
In Canada: J. H. Ryder Machinery Co. Ltd., Toronto 5.



Straddle-Bearing Spindle Support, in both grinding and regulating wheels, provides extra strength. Combined with the inherent rigidity of Norton spindles this boosts capacity to take heaviest cutting pressures, while permitting fast grinding to close tolerances under all conditions.



Mobile Grinding Wheel Head, with wheel mounted between head ways and feed screw located beneath wheel center for ideal balance, provides instant response to signals. This results in especially fast sizing, one of many important advantages over fixed head operation.



Work Loading Alignment is never disturbed by wear of either grinding or regulating wheel . . . neither is the alignment of the work rest blade. Movable heads for both grinding and regulating wheels make this advantage possible . . . and especially time-saving in a battery set-up.

Making better products . . . to make your products better

NORTON PRODUCTS: Abrasives • Grinding Wheels • Grinding Machines • Refractories • Electro-Chemicals — **DEHR-MANNING DIVISION:** Coated Abrasives • Sharpening Stones • Pressure-Sensitive Tapes

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container experts



THIS IS THE HOERNER SPECIALIST FOR PACKAGING BIG THINGS

Things as big as boats have been neatly packaged in corrugated containers by Hoerner experts. If you manufacture a big object and are faced with oversize cost or damage problems, call the nearest Hoerner office or plant. A Hoerner Packaging Engineer will be glad to help you bring those problems down to size.



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Sand Springs, Oklahoma • Minneapolis, Minnesota • Fort Worth, Texas • Sioux Falls, South Dakota
Fort Smith and Little Rock, Ark. • Affiliate—Cajas y Empaques Impermeables, S. A., Mexico City D.F., Mexico

FREE LITERATURE

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 97.

Metal Finishing

A pocket-size reference summarizes the metal finishing literature offered by the author company. It lists data sheets by number, product trade name, and use. (MacDermid Inc.)

For free copy circle No. 1 on postcard, p. 97

Welding Equipment

A brochure describes a new facility, now under construction, that will produce welding rods and electrodes directly from virgin metals. (Eutectic Welding Alloys Corp.)

For free copy circle No. 2 on postcard, p. 97

Flexible Coupling

Described in a two-page data sheet, flexible couplings are designed specifically for operating conditions where the shaft misalignment is too great to be handled by standard gear couplings. They will accept up to 5° angular misalignment. Featuring rigid hubs and moistureproof seals, they are available in bore sizes from 1¼ to 4½ in., and will take from 3½ hp per 100 rpm to 210 hp. (John Waldron Corp.)

For free copy circle No. 3 on postcard, p. 97

No-Chatter Countersink

Principles of operation of a chatterless, nonhazardous, and easy-sharpening countersink are contained in a four-page brochure. Because the surface behind each cutting edge is a straight circular grind, it provides a constant bearing during cutting, and the tool cannot dig in or chatter. An OD chamfering tool of the same principle is included. The line runs from 1/64

to 2 in., in 60°, 82°, and 90° angles. (Madison-Relco Tool Co.)

For free copy circle No. 4 on postcard, p. 97

Cold-Extruded Parts

A four-page bulletin treats the process of producing cold-extruded metal parts, their physical characteristics, mechanical properties, economies, and applications. (Burgess-Norton Mfg. Co.)

For free copy circle No. 5 on postcard, p. 97

Mechanical Toolholders

A complete line of all types of mechanical toolholders and throw-away inserts is specified in an 18-page catalog. (Firth Sterling Inc.)

For free copy circle No. 6 on postcard, p. 97

Screw Thread Chart

A chart shows all details and specifications for Unified and American External Screw Threads, and includes terms to be used when ordering these items. (The Ohio Rod Products Co.)

For free copy circle No. 7 on postcard, p. 97

Ultrasonic Cleaning

"Tips on Ultrasonic Cleaning" is a 12-page booklet describing basic principles, equipment, and applications. (Circo Ultrasonic Corp.)

For free copy circle No. 8 on postcard, p. 97

Casting Facilities

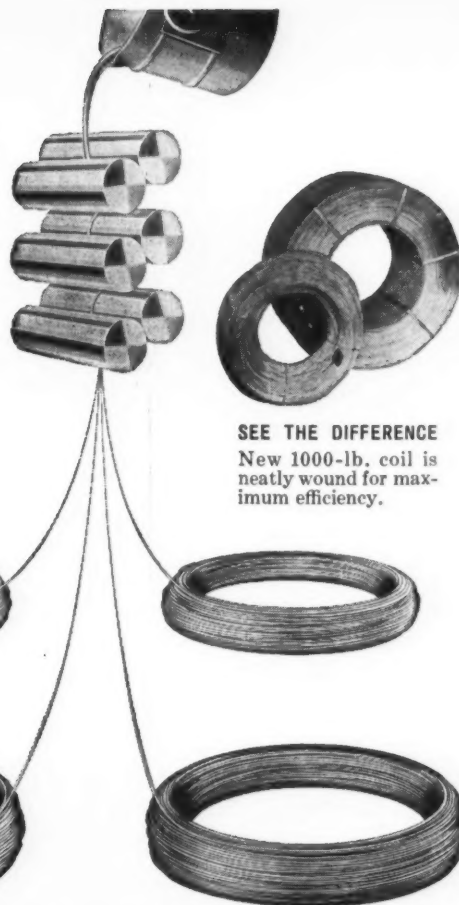
A brochure discusses one company's experience and facilities for the production of custom parts to individual specifications. The company has complete facilities for all casting and heavy machining jobs. A number of their products are illustrated. (Columbia Steel Casting Co.)

For free copy circle No. 9 on postcard, p. 97

Phosphor Bronze Rod

A technical bulletin includes data on phosphor bronze rod, an alloy of copper, lead, tin, and zinc particularly adapted to uses requiring corrosion resistance, strength, electrical conductivity, anti-friction, low-temperature performance, or nonmagnetic characteristics. Free-

The only one
of its kind
in the
country...



SEE THE DIFFERENCE
New 1000-lb. coil is
neatly wound for maximum
efficiency.

RIVERSIDE-ALLOY'S CONTINUOUS CASTING PROCESS PREVENTS POROSITY... SLASHES RELOADING TIME

Since phosphor bronze is one of the most difficult non-ferrous alloys to make satisfactorily into wire, how does Riverside keep so far ahead of competition? Here's one of the reasons: *Continuous casting*, a radical new and secret process, exclusive in America at Riverside-Alloy.

A special method of continuous casting eliminates the porosity of wire cast in water-cooled molds... brings you weld-free wire in coils up to 1000 lbs.

SPEED. With this new large coil your production runs are longer than ever before. Riverside wire speeds and smooths

your fabrication and scheduling. **QUALITY.** Riverside *continuous-cast* material is denser, more homogeneous than antiquated mold-cast products. Wire drawn from the continuous coil is stronger, free from weak spots which can stop production and cause high reject rates.

Your production equipment can be easily adapted to hold the new 1000-lb. coils of Riverside continuous-cast bronze wire. Find out how you can save with this remarkable new process. Write *Riverside-Alloy Metal Division, H. K. Porter Company, Inc., Riverside, N. J.*

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It can, you know. For every last piece of it represents money — money that belongs in your profit pile, not your scrap pile.

How do you evict this larcenous lodger? It starts disappearing as soon as you call Wheelock, Lovejoy — your local steel service center. W-L offers an extensive variety of special alloy steels — and you get them *cut-to-size*. By ordering your steel as you need it, you can practically eliminate waste. And you save important floor space by reducing your inventory.

Complete W-L facilities — including expert metallurgical service — are at your disposal *now*. See listing below for the W-L Branch nearest you. For complete technical information on grades, applications, heat treating, etc., write today for your **FREE COPY** of the Wheelock, Lovejoy Data Book.

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LOVEJOY
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126 Sidney St., Cambridge 39, Mass.



FREE LITERATURE

machining, it has widespread applications. (Bridgeport Brass Co.)

For free copy circle No. 10 on postcard, p. 97

Wear-Resistant Alloys

Eleven cobalt- and iron-base wear-resistant alloys are covered in a 32-page booklet of engineering data. Machining data are included. (Haynes Stellite Co.)

For free copy circle No. 11 on postcard, p. 97

Ingot Iron Tubing

Ingot iron tubing, featuring ductility, toughness, and high magnetic permeability, is described in a data memorandum. A variety of magnetic, electronic, nuclear, and coolant uses are suggested. (Superior Tube Co.)

For free copy circle No. 12 on postcard, p. 97

Round, Hex Aluminum

Cold-processed round and hex aluminum screw-machine stock is now available, and is described in an eight-page brochure. It features good density, fine grain structure, and close tolerances, permitting a fine machined finish that eliminates many secondary operations. (Olin Mathieson Chemical Corp.)

For free copy circle No. 13 on postcard, p. 97

Feedrail Systems

"Cost Reduction on Assembly and Production Lines" is a four-page bulletin showing the wide usage of Feedrail electrical conduit systems to operate electrical tools on production and assembly lines. (Feedrail Corp.)

For free copy circle No. 14 on postcard, p. 97

Tracer Shape-Cutter

A four-page brochure shows how simple pencil-line sketches of intricate shapes and forms can now be used to guide oxygen shape-cutting machines with a new electronic tracer. An automatic compensator for kerf width insures accuracy. (Linde Co.)

For free copy circle No. 15 on postcard, p. 97



Old Method - time consuming, requires two men



La Deau Method - takes just one man, is six times more efficient!

NEW TURNOVER CRADLES PALLETIZE COILS WEIGHING TO 40,000 LBS. IN SECONDS

Producers or users of coiled materials can now palletize coils weighing from 3000 to 40,000 pounds in 14-40 seconds with the completely automatic La Deau TURNOVER CRADLE. You save up to 400% in storage efficiency, 600% in labor efficiency, and eliminate elongated coils and dangerous band breakage. If you handle *only a carload of coiled materials per month*, you can pay for a TURNOVER CRADLE in about a year, with labor savings alone. Reason: the fully portable Cradle lets one man handle as much material in one hour as two men usually handle in three hours!

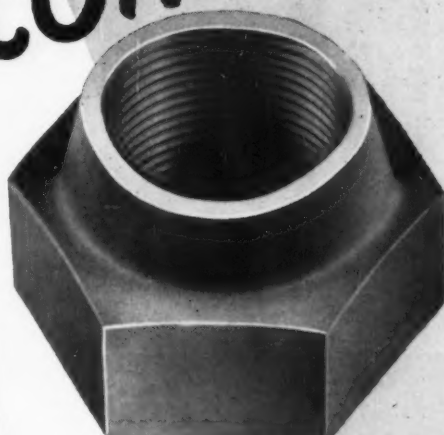


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NEW CONELOCK



one-piece locknut... with prevailing torque

Three sectors of the tapered portion of the CONE-LOCK nut are preformed inwardly (Fig. 1). When the Nut is applied to a bolt, these conforming sectors are elastically returned to a circular configuration and create an inward and downward pressure which produces intimate contact between the load carrying flanks of the nut and bolt threads (Fig. 2). The shape of the cone sector displacement insures conformity with the mating bolt and maximum friction contact area. . . . The closed stress path in the locking portion of the nut and the advantageous distribution of locking pressure, produce a locking device of high fatigue life . . . and equivalent locking force is exerted at only a fraction of the stress of any slotted type locknut. CONELOCK maintains its locking action through many re-applications. . . . It is adaptable to high, and low torque assemblies . . . to high torque stop-nut applications . . . and may be obtained in sizes from No. 10 to 1½", Full and Thick dimensions are "Standard".

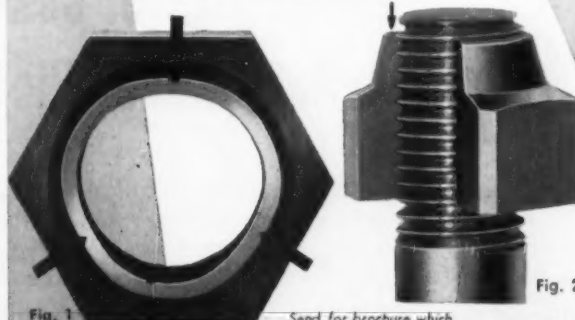


Fig. 1

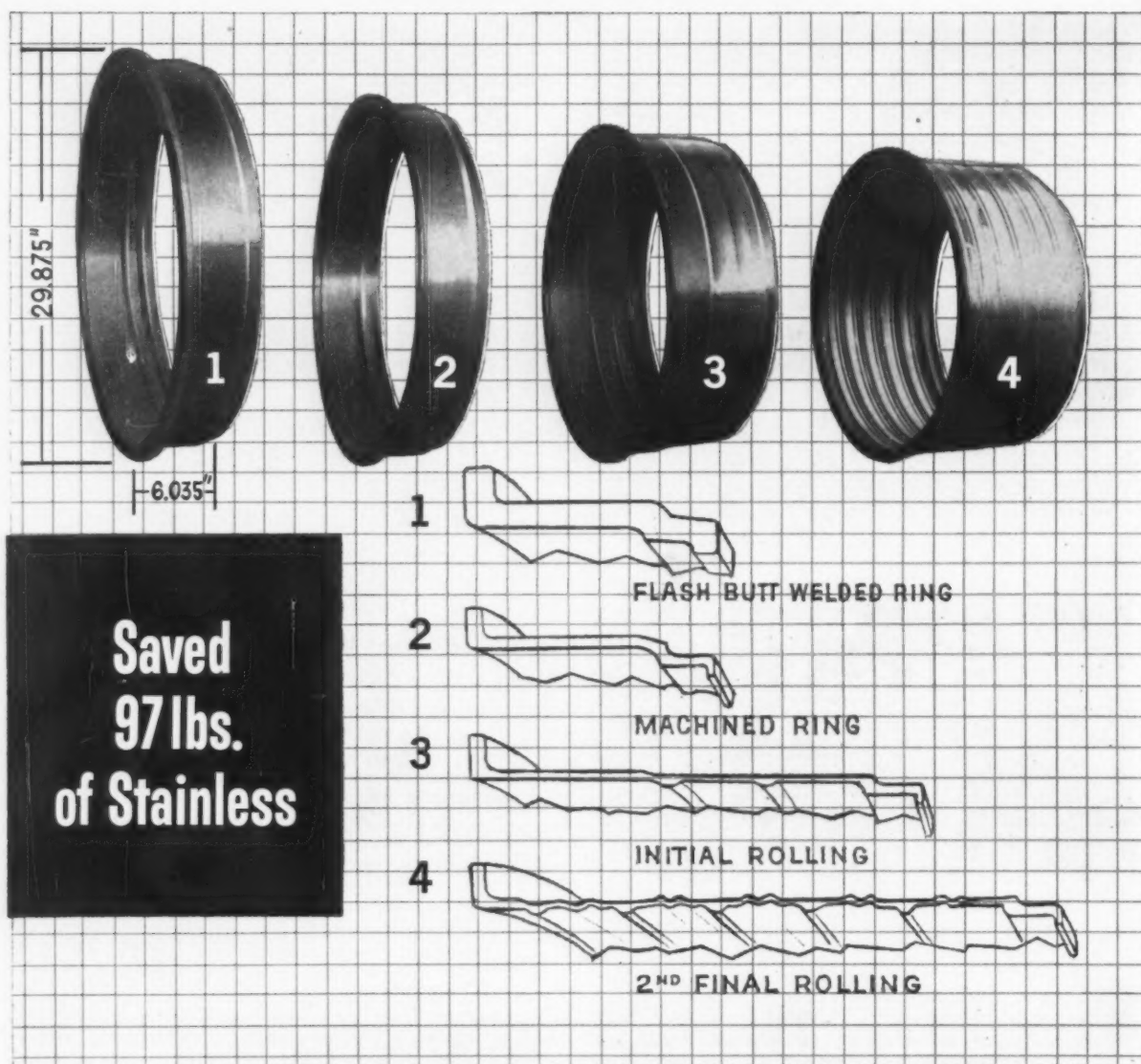
Fig. 2

Send for brochure which includes complete engineering specifications.

NATIONAL MACHINE PRODUCTS COMPANY

an **SPS** company 44250 UTICA ROAD
UTICA, MICH

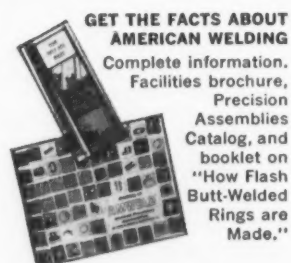




Jet Compressor Case is Rotary Roll-Formed From Flash Butt-Welded Rings--Excess Material Eliminated

Have you looked into the cost saving possibilities of using flash butt-welded rings for rolling or spinning operations? Where Amweld rings have been substituted for heavy forged blanks, users report excellent rolling performance and finished parts met all specifications. Cost per part was reduced \$25.40 each.

Amweld flash butt-welded rings can help you cut fabricating costs. Write or call today. Better yet, mail us your prints and specifications. We will study your problem and work with you.



THE AMERICAN WELDING & MFG. CO. • 120 DIETZ ROAD • WARREN, OHIO
AMERICAN WELDING

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Vibration Pads

A four-page brochure describes pads for machine mounting designed to damp out destructive shock, vibration, and noise. Made of Neoprene, they have recesses on both sides to provide suction grip and, in many cases, eliminate bolts, lag screws, and cement. (Fabreeka Products Corp.)

For free copy circle No. 16 on postcard

Platinum Products

An eight-page brochure describes a line of platinum-metal products, including metals and alloys in various forms, foil, electrical contacts, rhodium plating solutions, thermocouple wire, and others. Various metallurgical services are offered. (Metals & Controls Div., Texas Instruments Inc.)

For free copy circle No. 17 on postcard

Jig Borers

A new line of jig borers using separate end-measure systems for longitudinal and transverse settings is covered in a 28-page catalog, and the advantages of the end-measure system outlined. Precision end measures, inside micrometers, and dial indicators are employed. (Pratt & Whitney Co. Inc.)

For free copy circle No. 18 on postcard

Welding Power Sources

"Which Welding-Power Source Should You Use?" is a reprint of an eight-page article from The IRON AGE. It is a guide to selection of arc welders for the stick electrode, TIG, and MIG proc-

esses. (Air Reduction Co., Inc.)

For free copy circle No. 19 on postcard

Pneumatic Tools

A four-page brochure describes the line of Desoutter portable pneumatic tools (English), including a series of reversing and non-reversing miniature screwdrivers, and a bolt miller for shortening a bolt shank after the nut is run up. (Newage Industries, Inc.)

For free copy circle No. 20 on postcard

Overhead Crane

Features of one make of ½-ton overhead traveling crane for light material handling are described in a folder. (Whiting Corp.)

For free copy circle No. 21 on postcard

Machining Titanium

"Titanium Machining Techniques" is a beautifully illustrated and comprehensive 32-page study of successful machining practices under current operating conditions. All types of machining operations are covered. (Titanium Metals Corp. of America)

For free copy circle No. 22 on postcard

Polyvinyl Plastics

Liquid polyvinyl plastics that set with heat are described in a 16-page booklet. Detailed information is included on application and use. They can be used to clad all metals. (Bee Chemical Co.)

For free copy circle No. 23 on postcard

Mica Insulation

A line of bonded mica insulation, including four grades, is fully described and specified in a 16-page brochure. Fabricating tips are included. (Continental-Diamond Fibre Corp.)

For free copy circle No. 24 on postcard

Electronic Control

An illustrated bulletin describes an electronic control system applicable to adjustable drives, capable of maintaining set speeds within ±2 pct of maximum speed. (Dy-

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FREE LITERATURE

namatic Division, Eaton Manufacturing Co.)

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Overhead Handling

A complete line of equipment for overhead material handling, including track, trolleys, hoists, cranes, controls, and special carriers, is described in an attractive 52-page booklet, which includes illustrations of numerous applications. (The Loudon Machinery Co.)

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Three-Stage Forklift

A forklift truck with low clearance is capable of high stacking, thanks to its three-stage upright. Models with capacities of 3000, 4000, and 5000 lb are described in a four-page brochure. (Hyster Co.)

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Power Switching

Design of power switching centers in building-block fashion, through use of metal cubicles housing standardized components, is recommended in a 20-page bulletin. Information is provided to assist in selecting and specifying from a line of 4.8- to 14.4-kv equipment. (I-T-E Circuit Breaker Co.)

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MIG Welding Process

A 38-page booklet covers one process for metal-inert-gas, CO₂-shielded-arc welding of mild steel and low-alloy steels. CO₂ welding is comprehensively discussed. Many applications are illustrated. (Hobart Bros. Co.)

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Aluminum Sandwich Core

An aluminum sandwich core material manufactured out of continuous strips of aluminum foil, crimped into sine-wave patterns with spacers between, is described in a 12-page bulletin. Very forma-

ble, it can be shaped into compound curves, and can be used to advantage in construction of plastic tools, drill fixtures, and similar production aids, as well as to achieve structural strength with light weight in aircraft and a variety of other construction. (Narmco Resins & Coatings Co.)

For free copy circle No. 30 on postcard

Power System

A six-page bulletin describes an inverter-diverter continuous ac and dc power system which can change instantly to emergency operation. It is available in various ratings. (The Electric Products Co.)

For free copy circle No. 31 on postcard

Balancing Machines

A catalog and data sheets describe a line of production-line balancers and show how up to 200 parts an hour can be balanced with precision to 20 millionths. (Bear Mfg. Co.)

For free copy circle No. 32 on postcard

Diesel Engine Care

A series of bulletins entitled "Defeating Dirt" deals with that aspect of the care of diesel engines, covering various engine areas. (Cummins Engine Co., Inc.)

For free copy circle No. 33 on postcard

Die Design

A collection of "Design Suggestion Sheets" pertaining to metal stampings covers various aspects of part design, die design, and processing. They were prepared by a manufacturer of stamping dies and tooling to cut tooling and production costs and improve product quality. (Dayton Rogers Mfg. Co.)

For free copy circle No. 34 on postcard

Pipeline Pipe

The manufacture of a line of pipeline pipe by the electric-weld method is described in a 12-page booklet. Features, advantages, and specifications of the product are included. (Jones & Laughlin Steel Corp.)

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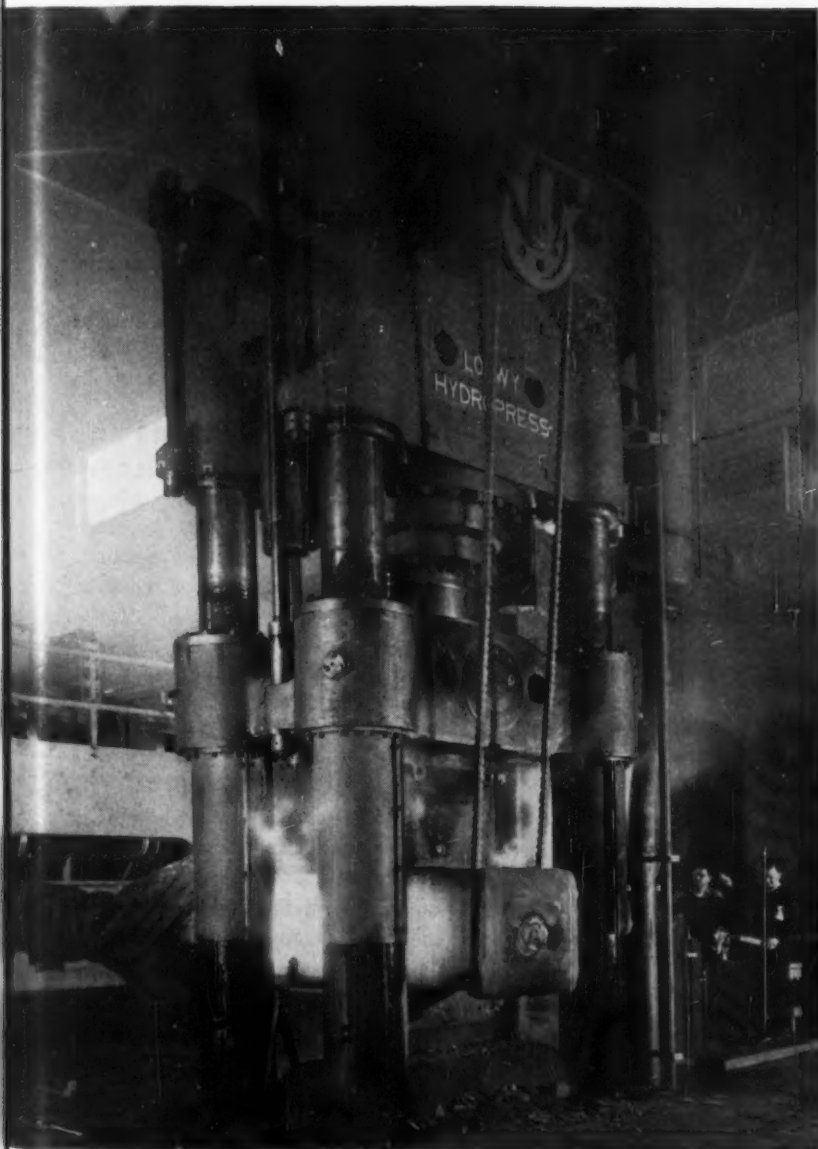
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Company

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City Zone State

From Loewy presses . . . high-quality steel forgings faster and bigger !



Loewy 2000-ton fast-forging press at Colonial Steel Co.,
a division of Vanadium-Alloys Steel Co.

Vanadium-Alloys Steel Company, a leading producer of tool and special steels, recently announced the completion of a \$3,500,000 expansion program, including a powerful Loewy 2000-ton-capacity forging press now in operation at Vanadium's Colonial Steel Co. Division, in Monaca, Pa.

"The use of this press," according to the customer, "will greatly speed up deliveries of forgings and at the same time offer a more uniform product with better quality control."

Due to its large daylight and die bed dimensions, the press will handle ingots measuring from 12 to 40 inches square and weighing from 1 to 10 tons. A wide range of materials, such as bearing steels, ultra-high-strength missile and aircraft steels and high-temperature alloys will be used in the forging operations to produce an extensive variety of products.

Leading alloy-steel makers praise Loewy fast-forging presses for their trouble-free operation and for the fact that they impart to special steels "internal qualities never before achieved." Equally important, they consistently outproduce conventional hammers and blooming mills.

Loewy forging presses are designed for full accessibility of tooling, easy supervision and maintenance. Fast closing, working and return speeds cut down idle time and prevent heat loss in the workpiece. Strokes per minute for planishing are unsurpassed by any other type of forging equipment. Pressure, tonnage and speed can be varied within a wide range to suit special requirements.

Loewy-Hydropress designs and builds open and closed die forging presses ranging from the smallest sizes to the enormous capacity of 50,000 tons. For further information, write Dept. A-9.

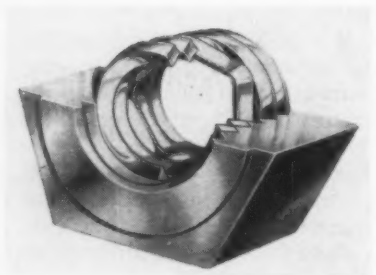
Loewy-Hydropress Division

BALDWIN · LIMA · HAMILTON

111 FIFTH AVENUE, NEW YORK 3, N.Y. Rolling mills • Hydraulic machinery • Industrial engineering



New Materials and Components

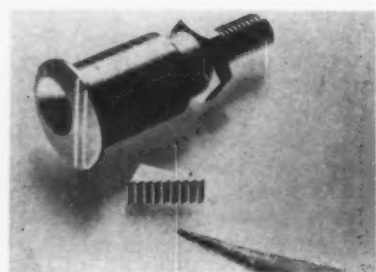


Wire Spring Gives Locknut Good Performance

An economical aluminum locknut uses a stainless-steel spring with one pentagon-shaped coil for locking, and meets military specifications for 550°F operation. The coil exerts uniform pressure for unvarying torque and locking friction, and constant position. Hardness

and quality finish of the spring prevent damage to mating threads, and suit the nut well to re-use or frequent turning in one use. The nut comes in many NC and NF sizes and in other metals. (Waltham Precision Instrument Co.)

For more data circle No. 36 on postcard, p. 97

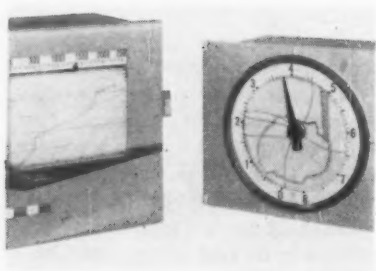


Production Casting Permits Close Tolerances

Minicast, a precision forming process, enables close tolerances with high production volumes, on intricate parts, even with superhard alloys, at very low unit cost. Pictured is a lock cam of stellite, a cobalt-chrome alloy, selected to provide wear-resistance and sharp

detail, and to eliminate heat-treatment. Its fluidity enables holding a 0.003-in. average radius on teeth for maximum clamping action. Most tolerances are held as close as ± 0.001 in., none over 0.003. (Casting Engineers, Inc.)

For more data circle No. 37 on postcard, p. 97

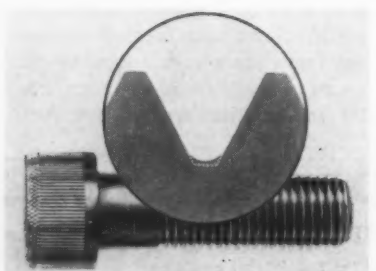


Pencil Graph Guides Automation Programmer

A totally new programming-controlling-indicating-recording instrument brings great simplicity, flexibility, and economy to process control. It "reads" a pencil-drawn program chart, controls a process accordingly, and draws a record of process performance on the same

chart. The program is drawn as a double-line graph. The controller, sensing any deviation of the recording pen from the middle, regulates the process to oppose the deviation. The closed-loop system brings great accuracy. (Research, Inc.)

For more data circle No. 38 on postcard, p. 97



New Thread Root Form Doubles Fatigue Life

A new thread form that doubles fatigue life under dynamic loading is now standard on the Unbrako socket-head cap screw line. The conventional flat thread root has been replaced by a smoothly radiused one which halves stress concentrations. In heavy fatigue load

applications, the new form doubles tension screw life. There is no effect on gaging or ease of engagement: the new screws qualify for 3A fit. This form has been used on critical high-strength bolts for 10 years. (Standard Pressed Steel Co.)

For more data circle No. 39 on postcard, p. 97

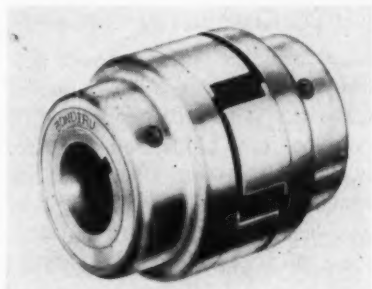
Bright Nickel Solution

A solution has been developed for a new, economical, bright nickel plating process. It has higher throwing power and produces a cleaner, whiter, and brighter deposit, completely free from the black deposits normally encountered in low density areas. No pre-plating activating treatments are required. (The Seymour Mfg. Co.)

For more data circle No. 40 on postcard, p. 97

Flexible Couplings

A line of aluminum flexible insulated couplings are designed for light-duty applications. Coming in six sizes, they have 20 standard bore sizes from 1/4 to 1 1/2 in., and are furnished with keyways and setscrews. They will transmit up to 10 hp at 1800 rpm. Projecting segments on the mating aluminum



flanges engage each other through a nonmetallic insert which carries the load in compression, as well as eliminating electricity and absorbing shock and torsional vibration. These couplings automatically compensate for end-play and lateral and angular misalignment. (Charles Bond Co.)

For more data circle No. 41 on postcard, p. 97

Plated Fasteners

A company's line of electro-zinc-coated nuts and bolts is now supplied with a new zinc finish with twice the corrosion-resistance of conventional electro-zinc finishes, at the same price. The new finish is particularly recommended for corrosive atmospheres. (Republic Steel Corp.)

For more data circle No. 42 on postcard, p. 97



You get greater strength . . . with

SHENANGO CENTRIFUGAL CASTINGS

Downtime, rejects, heavy maintenance costs and too-frequent replacements can be cut down *appreciably* by the use of Shenango extra-strong centrifugal castings.

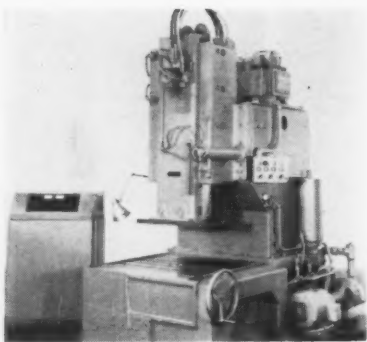
They provide a finer, *pressure-dense* grain . . . with all the weakening defects eliminated, such as blowholes and sand inclusions.

Though built to stand the most rugged service, each Shenango casting is precisely-dimensioned to your exacting requirements. Whether you need rolls, bearings, bushings, mandrels, sleeves, liners, or any other essentially symmetrical part . . . *specify Shenango* for greater strength, greater wear-resistance, greater lasting power and greater savings, year after year.

Informative bulletins are yours for the asking. Write to: *Centrifugally Cast Products Division, The Shenango Furnace Company, Dover, Ohio.*



New Equipment and Machinery

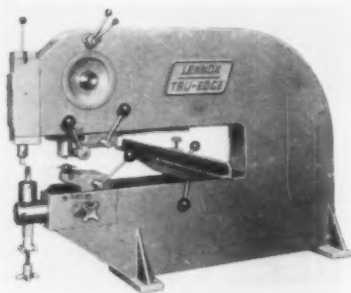


Electricity Works Any Metal to Any Shape

The result of continuing research, a new line of 33 machines make spark-discharge machining practical for difficult tool-and-die operations of all types. Any metal that conducts electricity, including most carbides, can be handled, despite hardness, strength, or structure. And since current removes metal, without tool contact, there is zero deflection, permitting cutting of thin

sheets and honeycomb. "Building-block" design permits tailoring machines for particular problems. This process will be especially useful for generating complex forms, "drilling" non-circular holes, and die-sinking (made easier with perfection of the technique of diecasting electrodes). (The Cincinnati Milling Machine Co.)

For more data circle No. 50 on postcard, p. 97

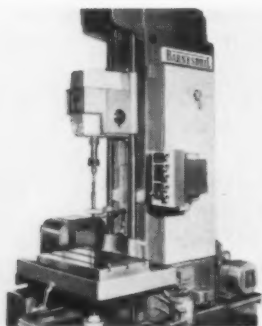


Portable Bench Shear Is Easy to Operate

A bench-model shearing, forming, and piercing machine has edge-cutting capacity to 12 gage in mild steel and 16 in stainless. Run by a 1/2-hp motor, it has a stroke adjustable from 0.022 to 0.110 in. without stopping, by a simple pointer setting. Stroke speed, from 1750 to 3500 per minute, is automati-

cally regulated when operator sets the pointer, cutting 8 to 15 ipm of material. With stock tooling, this machine center-cuts, cuts inside, slots, joggles, beads, louvers, dishes, straight-flanges, circle-flanges, and edge-bends. (Lennox Tool and Machine Builders)

For more data circle No. 51 on postcard, p. 97



Hones Bores From 1/2 to 6 In.

Simple, effective controls are features of a high-production honer for bores from 1/2- to 6-in. diam. Size is maintained within 0.0002 in. from bore to bore. An electric hone expansion unit gives infinite feed adjustment. Warning lights go on upon maximum stone wear, and controls prevent a new cycle until new hones are in. The machine

comes with one or two spindles with choice of three stroke lengths. Accurate reversal stroke permits short-stroking at any point, and suits the machine well to honing ported bores. A 5-hp, V-belted motor powers the spindle, and a 3-hp motor performs hydraulic reciprocation. (Barnes Drill Co.)

For more data circle No. 52 on postcard, p. 97



Strip Wheel Makes Polishing More Flexible

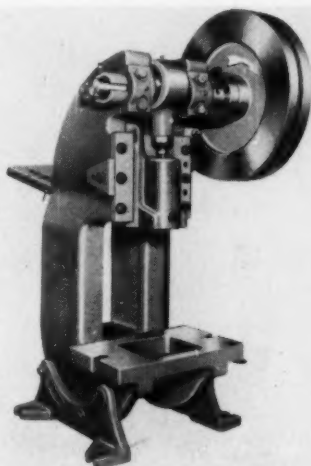
A "slashed" wheel makes cleaning and polishing of metal parts more flexible. The "leaves" are cut into thin strips. Upon rotation, the abrasive "fingers" mold to irregular shapes and get down into places which formerly could be finished only by hand. The abrasive wears

evenly, and a new cutting edge always presents itself. New abrasive loadings are put in the slotted hub. Wheels come in diam of 14 and 16 in., widths from 3 to 60 in., grits from #50 to #350 aluminum-oxide cloth. (Merit Products, Inc.)

For more data circle No. 53 on postcard, p. 97

Bench Press

A bench-type open-back inclinable press develops 5 tons, yet is designed to meet economy requirements. Standard stroke is 1 in. with 7½-in. shut height, but 1¼-, 1½-, and 2-in. strokes are also

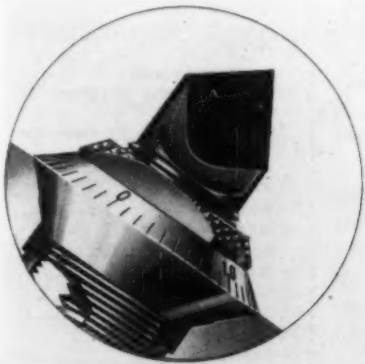


available. The ram is adjustable 1 in. and has a 1-in. hole for tooling. A single-trip clutch is employed. It operates at 280 to 290 strokes per minute with a ¼-hp motor. (Benchmaster Mfg. Co.)

For more data circle No. 54 on postcard, p. 97

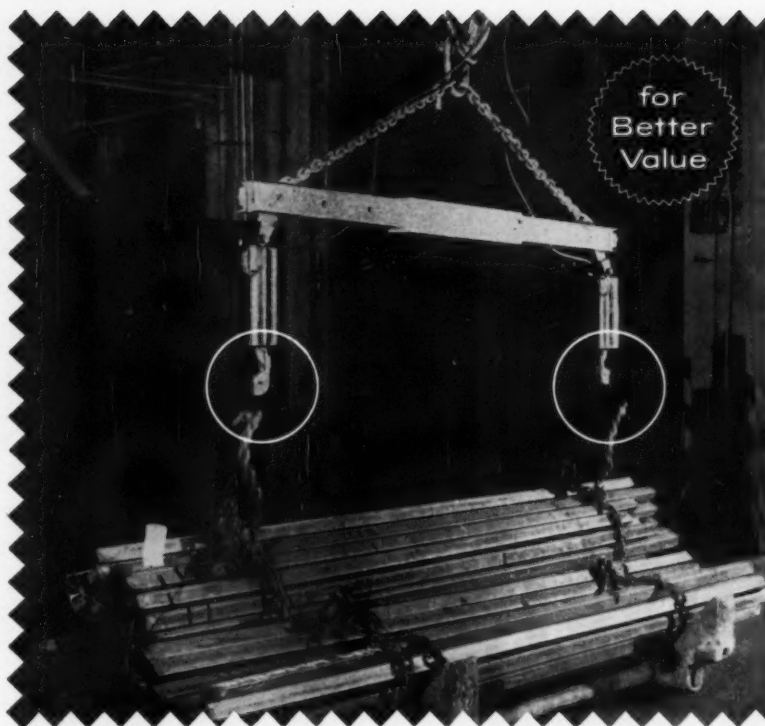
Microbore Tools

A new line of microbore tools tipped with titanium carbide and ceramic provide speeds and feeds impossible with other cutting tools. They provide excellent finishes.



Cone-relief-ground, they have a cone seat assembly for the rigidity required to derive maximum benefit from these cutting materials. (DeVlieg Machine Co.)

For more data circle No. 55 on postcard, p. 97



Where's the Man in this picture? HE'S AT SAFE DISTANCE RELEASING THIS LOAD BY PUSH BUTTON CONTROL!

• Think of it! Now you can release "tough-to-handle" loads safely and without help from a follow-up man with the new Acco Solenoid Chain Release. Truly a revolutionary development in material handling, the Acco Solenoid Chain Release is controlled by the crane operator from his cab. Simply by pushing a button, he activates solenoids on the end of a spreader bar which in turn expels the chain from the hooks and releases the load. What if the control button is pressed accidentally or the power fails while the load is in the air? Nothing will happen because load must be on the floor with tension removed from the chain before solenoids operate.

The Acco Solenoid Chain Release is the safe answer to many material handling jobs where conditions make it dangerous for a man to unhook the load. Placing bundles of steel billets in a cooling pit is but one job made far safer by this labor-saving equipment.

The Acco Solenoid Chain Release can be ordered now in single or double spreader bar models. Accoloy X-Weld 125 Chain is normally furnished with both models although other types of chain are available upon special request. Spreader bar is sturdy I-Beam steel. Individual solenoid units without the spreader bar are also available. For complete information write our York, Pa., office.

ACCO Registered SLING CHAINS

American Chain Division • American Chain & Cable Company, Inc.

Bridgeport, Conn. • Factories: *York and *Braddock, Pa.

Sales Offices: *Atlanta, Boston, *Chicago, *Denver, Detroit, *Houston, *Los Angeles, New York, Philadelphia, Pittsburgh, *Portland, Ore., *San Francisco

*Indicates Warehouse Stocks



FIGURE 2 factors to get the cost of steel...

Initial price! And COST OF POSSESSION!

If you're putting steel in inventory for later use because you think it's a bargain, compare all your costs, including cost of possession, with the price and *freedom from risk* of buying from your Steel Service Center.

Many steel users have found that using Service Center steel saves expensive storage space and saves the costs of obsolescence, waste, handling and cutting.

When you use Steel Service Center

labor and equipment for preliminary processing, you save both the investment and operating expense of having your own labor and equipment.

Use the chart to figure all your costs. For more information, get the booklet, *What's Your Real Cost of Possession for Steel?* Ask your nearby Steel Service Center. Or write to American Steel Warehouse Association, Inc., 540-D Terminal Tower, Cleveland 13, Ohio.



The American Steel Warehouse
...YOUR STEEL SERVICE CENTER

COST OF POSSESSION FOR STEEL IN YOUR INVENTORY

Per ton delivered	_____
Cost of capital:	_____
Inventory	_____
Space	_____
Equipment	_____
Cost of operation:	_____
Space	_____
Materials handling	_____
Cutting & burning	_____
Scrap & wastage	_____
Other costs:	_____
Obsolescence	_____
Insurance	_____
Taxes	_____
Accounting	_____
TOTAL	_____

COST OF FREEDOM-FROM-RISK STEEL FROM YOUR STEEL SERVICE CENTER

Per ton, cut-to-size, and delivered	_____
TOTAL	_____

The Iron Age Summary

The Pinch Is Here for Steel Users

Post-strike delivery dates are out as far as five to six months for some products.

Big users start to feel pinch for cold-rolled, hot-rolled and galvanized sheets.

■ New orders placed for already hard-to-get steel products will not be delivered for five to six months after the steel strike's end.

Mills are now sold out for a minimum of three and probably four months on cold-rolled sheet, galvanized sheet, and hot-rolled sheet. But this week, some steel mills are taking orders for these products into the fifth and even sixth month after the strike.

March Delivery — This means that should the strike end by Sept. 15, orders placed for these products could not reach the user until February or March.

These products already on the tight list are particularly vital to the automotive, appliance and construc-

tion industry operations.

Shortages Crop Up—The scrambling for steel at all sources (warehouses, operating mills, and foreign steel brokers) indicates that steel inventory reports may have been greatly inflated. While total steel tonnage was accurately reported, it did not reflect early shortages of some products.

Some auto companies are already concerned over their ability to last out pipeline-filling. The auto companies, which had boasted adequate inventories to get into 1960 model production, are feeling some imbalance in their own stocks.

But they are even more concerned over inventory conditions among their parts suppliers, who were less successful in inventory building.

Appliances Hurt—In the appliance industry, some major shut-downs are set for the third or fourth week in September. This hits at the peak of seasonal demand for many

major appliances.

Steel warehouse customers are already feeling the pinch in some products. Although the steel service centers report better than three million tons of total inventory, inventory holes are becoming critical.

Pressure Points—This points out that warehouse inventories, while outwardly large, are not uniformly distributed over the country and are not uniformly distributed over all steel products.

Mills operating with company unions or extended contracts report increasing requests for steel from users that are not regular customers. But these mills have been operating at capacity and any new business would have to come at the expense of established customers.

The result is that steel users who have holes in their own stocks are finding it increasingly difficult to fill them. This situation will become more critical each week until the strike ends.

Steel Output, Operating Rates

Production	This Week	Last Week	Month Ago	Year Ago
(Net tons, 000 omitted)	353	332	332	1,561
Ingot Index				
(1947-1949=100)	22.0	20.7	20.7	97.2
Operating Rates				
Chicago	5.0	5.0	4.0	76.0
Pittsburgh	3.0	3.0	3.0	54.0
Philadelphia	12.0	12.0	15.0	75.0
Valley	10.0	10.0	10.0	49.5
West	0.0	0.0	0.0	79.5
Cleveland	0.0	0.0	0.0	48.5
Detroit	24.0	23.0*	24.0	72.0
Buffalo	0.0	0.0	0.0	49.0
South Ohio River	63.0	61.0	47.0	86.0
South	12.0	12.0	9.0	52.0
Upper Ohio River	48.0	44.0*	51.5	81.5
St. Louis	87.0	79.0*	70.0	69.0
Aggregate	12.5	12.0	12.0	57.0

*Revised

Prices At a Glance

	This Week	Week Ago	Month Ago	Year Ago
(Cents per lb unless otherwise noted)				
Composite price				
Finished Steel base	6.196	6.196	6.196	6.188
Pig Iron (gross ton)	\$66.41	\$66.41	\$66.41	\$66.49
Scrap No. 1 hvy				
(Gross ton)	\$41.17	\$40.17	\$39.83	\$42.83
No. 2 bundles	\$27.67	\$27.67	\$27.33	\$29.17
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	26.80
Copper, electrolytic	30.00	30.00	30.00	26.50
Lead, St. Louis	12.80	12.80	11.80	10.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	102.50	102.875*	102.00	96.00
Zinc, E. St. Louis	11.00	11.00	11.00	10.00

Clinics Tell the Casting Story

Cross-country castings clinics are providing new data and ideas for purchasing agents and engineers.

Their success during the past year has lead to plans for a new series by the Gray Iron Founders' Society.

■ A cross-country "road show" of castings clinics for purchasing agents and engineers was successful in drawing over 600 attendance and groundwork is being laid for a new series by the Gray Iron Founders' Society, Inc., Cleveland.

"The clinics indicate that purchasing agents and product engineers are hungry for knowledge about castings, but have a hard time finding data," says Don Work-

man, executive vice president.

New Series Planned — "Many members also report inquiries from new prospects as a result of the clinics. We are now surveying the members to firm up plans for a new series."

Questions from the floor and written comments sent in later, indicate the bulk of those attending the clinics were way behind the times in their knowledge of how castings have been improved in recent years.

The two "stars" of the show, Charles F. Walton, technical director, and Richard C. Meloy, marketing director, said there was a surprising degree of interest in academic information about castings properties and characteristics.

Many in attendance had admittedly paid little attention to cast-

ings since engineering school. They weren't aware of the design and economic possibilities.

Most of the engineers' attention had been concentrated on product design. And purchasing men had given little consideration to converting parts from other methods or redesigning parts for improvement or lower cost.

New Business Expected — Some new business for the foundries is expected, according to written comments from those who attended. Of the 220 who mailed in questionnaires later, 96 or 44 pct said they intend to investigate castings for new uses.

Other castings clinics have, of course, been held by individual foundries. The first was a highly successful one at Banner Iron Works, St. Louis, in December 1956 when 77 came from as far as Pennsylvania and Texas.

Buyer's Guide — Over 1800 copies of the society's "Buyer's Guide" have also been distributed since publication. This book lists all member foundries, their officials, and range of facilities.

Meetings were held in Cleveland, St. Louis, Los Angeles, San Francisco, Pittsburgh, Philadelphia, Milwaukee, Chicago (2); Newark, Cincinnati, Dayton, Detroit, Lansing, Indianapolis, Hartford, Boston, Minneapolis, Toronto, and Erie, Pa.

Discussion Topics — During the day-long clinics, discussions are held on what cast iron is and what a casting is. Properties of gray, ductile, white, and high alloy irons are explained in morning sessions.

Why They Liked the Clinics

"I found my thinking stimulated along lines of redesign and more effective use of iron and its alloys. A well rounded program."

"Thought the clinic well worth attending—informative and thought tickling."

"Congratulations, a very informative and stimulating day."

"Nicely presented — covered a good deal of ground in a minimum of time."

"Your preparation and tools to present course sessions were excellent—timing of entire program well handled."

"An excellent program presented with enthusiasm and real 'know how!'"

"You are to be congratulated on your very fine program."

"Have attended many seminars and programs in the past dealing with various engineering problems, however, I believe yours to be the most enlightening I have yet attended. Your presentation was thorough and interesting."

"As an experienced user of castings, we consider the clinic a well rounded review."



When you're talking
about a \$162,000
dipper shovel, you've got to
talk about
the best
rope for it



Talking about or working with, the same thing applies. Anything below Royal Blue's performance level is simply unrealistic. Like looking for a cut-price brain surgeon.

Even at \$162,000, the cost of wire rope is important. That's why so-so ropes can cost you more in the long run, because so-so ropes are *short run*. Royal Blue, on the other hand, is built by America's oldest manufacturer of wire rope to last, to do the job without a whimper. Here's why.

Royal Blue is made from the toughest rope wire ever made—Type 1105—extra high-strength improved plow steel. This pedigree gives to the rope qualities that you can't find in any other rope: exceptional resistance to shock, abrasion, fatigue and impact. Add to these a flexibility that age cannot wither nor hustling fade and you've got a collection of characteristics that make Royal Blue the strongest rope you've ever used.

A \$162,000 Dipper Shovel deserves the best and your Roebling Distributor has it... Royal Blue. For information, write to Roebling's Wire Rope Division, Trenton 2, N. J.

ROEBLING 

Branch Offices in Principal Cities

John A. Roebling's Sons Division • The Colorado Fuel and Iron Corporation

Holes Developing In Warehouse Stocks

Despite the strike drain on supplies, service center inventories are still large.

But problems are cropping up because supplies are not distributed evenly.

■ Steel service centers are running into inventory troubles. On a nationwide basis stocks are still large—estimated at 3.1 million tons by the American Steel Warehouse Assn. But these supplies are not distributed evenly, either geographically or by products.

As a result there are problems:

Some Midwest warehouses are already sold out on some standard size steel items. On others, they have reduced supplies.

Service centers which are parts of chains are canvassing outlets in several cities to fill out inventory holes.

Customers, told that service center stocks are ample, are disappointed when specific orders can't be filled.

Faster Pace—Some buyers are continually checking among warehouses in hopes of picking up small lots of needed tonnage.

The pace of warehouse inventory liquidation stepped up late in August. During the week of August 22 it jumped to 175,000 tons a week, according to the association. Before that it had been running at a level of 150,000 tons a week.

Country-wide samplings of members, the association says, show they are occasionally substituting some sizes within the same gage to fill orders.

Sheet and Strip—Customers, now dipping deep into inventories, are worried about getting fast shipments when mills start up after the strike. Some buyers estimate it will take at least three weeks for hot-rolled sheet production to hit high levels. Cold-rolled sheet mills may need four weeks. Enameling sheet producers may require six weeks.

Appliance makers are also concerned about sheet supplies. With their seasonal peak period for production coming up, some are facing September shutdowns.

Midwest sheet users are scouting the whole area for supplies—usually without success. Sheet stocks, in gages 18 through 22, are exhausted. Galvanized sheet from Japan is showing up in the **Chicago** area.

Bar—Cold finishers are beginning to feel the lack of hot-rolled bar supplies. Among cold finishers now operating, some are on a three-day work week. One major producer has closed down its plants.

Foreign Steel—The strike is stimulating sales of imported steel. But so far, the supplies are coming from

PURCHASING AGENT'S CHECKLIST

Strike won't boom sales of foreign steel. But imports are running at high levels. P. 38

Both sides are still far apart on key issues as steel strike enters eighth week. P. 39

New line of electrical discharge machines introduced by Cincinnati Milling. P. 61

previous sources and going to established customers. (See story p. 38.)

Plates, structurals, and wire are arriving in large quantities at **De-troit**. Most of the steel is coming from Belgian mills via the St. Lawrence Seaway. Some of the tonnage is from German and French mills.

Chicago steel users are being offered foreign-made plate at prices \$25-\$35 over domestic mill prices. Imported sheet is selling in the same market at 12¢-14¢ a lb, broker price as against American prices of 5.10¢.

Stainless—Greater use of stainless steel in two markets: (1) atomic energy, aircraft, and missiles, and (2) the automotive and architectural field—helped set all-time records for stainless production and shipments in the first half.

Shipments during that period were 71 pct over the first six months in 1958, according to the Committee of Stainless Steel Producers, American Iron and Steel Institute. From January to June this year, shipments were 390,133 net tons.

Production of stainless ingots was 739,764 tons this year, 95 pct above the 379,179 tons produced in the first half of 1958.

Shipments to the automotive industry showed the greatest gain. This year's first half total was 63,923 tons, an increase of 169 pct above the 23,771 tons shipped in the same period of '58. The first half report this year almost equalled the 67,640 tons used by the auto industry during all of 1958.

Warehouses chalked up the second biggest boost in stainless shipments. The first half total of 152,471 tons was more than 90 pct greater than the 79,596 tons supplied in the initial half of last year.

Fabricated Steel—Bookings and shipments of fabricated structurals declined during July, according to the American Institute of Steel Construction. Despite the drop, the Institute noted, 80 pct of its members were still booking orders for jobs running up to 300 tons.

COMPARISON OF PRICES

(Effective Sept. 1, 1959)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price changes from previous week are shown by an asterisk (*).

	Sept. 1 1959	Aug. 25 1959	Aug. 4 1959	Sept. 2 1958
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	5.10¢
Cold-rolled sheets	6.275	6.275	6.275	6.275
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.875
Hot-rolled strip	5.10	5.10	5.10	5.10
Cold-rolled strip	7.425	7.425	7.425	7.425
Plate	5.80	5.80	5.80	5.82
Plates, wrought iron	13.55	13.55	13.55	13.55
Stain's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	\$10.65	\$10.65	\$10.65	\$10.80
Tin plates, electro (0.50 lb.)	9.35	9.35	9.35	9.00
Special coated mfg. ternes	9.90	9.90	9.90	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	5.675¢	5.675¢	5.675¢
Cold finished bar	7.65	7.65	7.65	7.65
Alloy bar	6.725	6.725	6.725	6.725
Structural shapes	5.50	5.50	5.50	5.50
Stainless bars (No. 302)	46.75	46.75	46.75	45.00
Wrought iron bars	14.90	14.90	14.90	14.90
Wire: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	8.00¢
Rails: (per 100 lb.)				
Heavy rails	\$5.75	\$5.75	\$5.75	\$5.525
Light rails	6.725	6.725	6.725	6.50
Semi-finished Steel: (per net ton)				
Re-rolling billets	\$80.00	\$80.00	\$80.00	\$80.00
Slabs, re-rolling	80.00	80.00	80.00	80.00
Forging billets	99.50	99.50	99.50	99.50
Alloys, blooms, billets, slabs	119.00	119.00	119.00	119.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.40¢
Skelp	5.05	5.05	5.05	5.05
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.196¢	6.196¢	6.188¢

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite


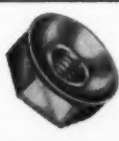
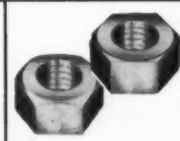





Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo and Birmingham.

	Sept. 1 1959	Aug. 25 1959	Aug. 4 1959	Sept. 2 1958
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	\$70.57	\$70.57	\$70.57	\$70.97
Foundry, Southern Cin'ti	73.87	73.87	73.87	73.87
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.07	70.07	70.07	70.47
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese, 74-76 pct Mn, cents per lb.	12.25	12.25	12.25	12.25
Pig Iron Composite: (per gross ton)				
Pig iron	\$66.41	\$66.41	\$66.41	\$66.49
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	\$45.50*	\$43.50	\$43.50	\$44.50
No. 1 steel, Phila. area	39.50	39.50	39.50	39.50
No. 1 steel, Chicago	38.50	37.50	36.50	44.50
No. 1 bundles, Detroit	38.50*	36.50	37.50	37.50
Low phos., Youngstown	45.50	45.50	44.50	46.50
No. 1 mach'y cast, Pittsburgh	52.50	52.50	52.50	51.50
No. 1 mach'y cast, Phila.	50.50	50.50	50.50	49.50
No. 1 mach'y cast, Chicago	60.50	60.50	59.50	53.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	\$41.17*	\$40.17	\$39.83	\$42.83
No. 2 bundles	27.67	27.67	27.33	29.17
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	\$14.50-15.50	\$14.50-15.50	\$14.50-15.50	\$14.50
Foundry coke, prompt	18.50	18.50	18.50	18-18.50
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	30.00	30.00	30.00	26.50
Copper, Lake, Conn.	30.00	30.00	30.00	26.50
Tin, Straits, N. Y.	102.50†	102.875**	102.00	96.00
Lead, St. Louis	11.00	11.00	11.00	10.00
Zinc, East St. Louis	12.80	12.80	11.80	10.80
Aluminum, virgin ingot	26.80	26.80	26.80	26.80
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	29.50

† Tentative. ‡ Average. ** Revised.

Steel Scrap Composites

Average of No. 1 heavy melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

 CONDUIT LOCKNUTS — Up to 6"	 SPRING-NUTS Preassembled Nut & Spring Lock Washer	 FINISHED NUTS Heavy • Regular Jam
 VOLUME-CONTROL & SWITCH MOUNTING NUTS Single & Double Chamfer	 STOP-NUTS WITH FIBER INSERT	 WING NUTS
 MACHINE-SCREW NUTS Standard & Small Pattern—Single & Double Chamfer	 CAP NUTS	 STOP-NUTS Standard & Reversible One-Piece—Re-usable

Available in Stainless Steel, Silicon Bronze, Brass, Aluminum and Steel

JACOBSON NUT MFG. CORP. Kenilworth, New Jersey

At Last... Positive Protection Against Paint Spray

with the New **FLEX-A-PRENE® PAINT MASK**

Ideal for Hot Weather Use!

New Efficiency
The sensational new FLEX-A-PRENE Paint Mask keeps out paint pigments and solvents with amazing efficiency, yet it's light (just 1 ounce), comfortable and so easy to talk and breathe through you hardly know you're wearing it.

New Economy
FLEX-A-PRENE's low first cost is only part of the story. Most important savings come from its endurance in service and time saved through less frequent filter replacements. You can expect at least 100 hours of exposure before filter replacement is necessary.

Sample: **\$150** postpaid
(INDUSTRIAL PRICE ONLY)

FLEXO Products, Inc. Westlake, Ohio

Prices Edge Upward In Firm Market

Dealers feel scrap is more valuable in their yards than moving at current prices.

Export continues strong and holds prices firm in coastal areas.

■ Export and dealer optimism rule the market.

In coastal areas, export is strong and holds prices firm. Most ports have cargoes loading or scheduled for the next few weeks.

Dealers are confident that scrap is more valuable in their yards than moving out at current prices. The trade is very optimistic that the end of the strike will bring higher prices.

In spite of the holding tendency, there are few reports of bulging yards. Scrap generation has been slow, and continues that way. Industrial lists were generally higher this month.

Prices are holding, or edging upward in the firm market.

Pittsburgh—The market remains inactive but firm. Strikebound mills are reported interested in buying scrap but not at higher prices. Dealers take the position that a strong future market makes it better to own scrap than to have orders at present levels. Local factory bundles averaged a little better than \$45 to the producer. This was about the same as last month. The tonnage was up from the August list but is still well under peak levels. Demand for rerolling rails strengthened related grades. Cast is strong and tight.

Chicago—Scrap continues firm, with dealer prices strengthening.

Dealer stocks are reported fairly low. New railroad sales pushed railroad prices up \$1. Electric furnace grades and cast grades continue very strong and rising. Strong out-of-area scrap movement continues. Random length rail prices advanced \$2 on new purchases.

Philadelphia—Export sales continue propping up the market. Several boats are scheduled in for loading this month following a busy July and August. Domestic sales to operating mills are at established prices. Foundry orders are keeping cast grades strong. Recent purchases widened the spread on cupola cast to \$40-\$42. Dealers report no great problems in collecting scrap. But the export orders are keeping yards clean.

New York—Current prices continue to carry sales, mainly export. Foreign mills are reaching out for scrap to maintain their own operations, and provide enough order volume to maintain prices here. Domestic business is very small, but some brokers believe that large mills may start optioning material against strike's end as the ore season gets later.

Detroit—Industrial lists were stronger as August closed. Main price increases were No. 1 dealer bundles and No. 1 busheling. Reports are some dealers who were slow on inventories bought in order to have a scrap supply on hand when the mills open up. Dealers say the longer the strike lasts the weaker business will become.

Cleveland—An area mill bought low phos, dealer and industrial scrap from specified yards for \$46,

confirming Valley and Cleveland prices. Area auto lists held firm at current levels, slightly over a month ago, apparently on speculation that the strike should end before scrap is generated. Area list hit about 25,000 tons.

St. Louis—Scrap prices remained firm despite some feeling of uncertainty. However, the general trend of thought is that prices will creep upward in the not too distant future. Prices held unchanged despite a slacking of demand due to Laclede Steel being out of the market during contract talks.

Cincinnati—Up and down river mills have become the major factor in a slow market. Offered prices are unchanged for the month and local factory bundles sold for about \$42. Dealers won't sell locally and operating mills won't raise. Little distress scrap is being offered.

Birmingham—There seems to be an underlying strength in the steel scrap market, particularly for foundry grades, but the cast market appears a little weaker. Some foundries are reported paying above the market on special deals and Anniston Ordance Works has raised its price on a large order of foundry steel which it calls No. 2 steel.

Buffalo—Two small sales of No. 1 cupola cast jumped the price of this grade \$2. No. 1 machinery cast also rose \$2. Otherwise, the market is quiet with the trade marking time until the end of the steel strike.

Boston—Prices are holding firm despite the steel strike. But dealers are waiting for the strike to end.

West Coast—Several major firms are reported buying scrap and stockpiling it in dealers' yards. Prices continue firm. Exporting is still the backbone of the market.

Houston—Market retains status quo; exports still dominating the picture here with two ships loaded with scrap for Mexico and Japan. Exporting brokers still quoting prices of \$1 to \$5 a ton above domestic prices. Scrap intake is small because of rains.

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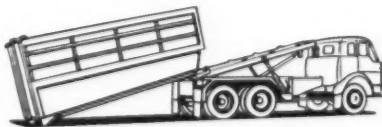
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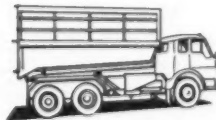
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EXPORT SALES: BORG-WARNER INTERNATIONAL CORPORATION, CHICAGO

SCRAP PRICES (Effective Sept. 1, 1959)

Pittsburgh

No. 1 hvy. melting	\$45.00 to \$46.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	44.00 to 45.00
No. 1 factory bundles	47.00 to 48.00
No. 2 bundles	29.00 to 30.00
No. 1 busheling	43.00 to 44.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	26.00 to 27.00
Low phos. punch'g's plate	47.00 to 48.00
Heavy turnings	35.00 to 36.00
No. 1 RR hvy. melting	44.00 to 45.00
Scrap rails, random lgth.	56.00 to 57.00
Rails 2 ft and under	61.00 to 62.00
RR specialties	53.00 to 54.00
No. 1 machinery cast.	52.00 to 53.00
Cupola cast.	46.00 to 47.00
Heavy breakable cast.	44.00 to 45.00

Stainless	
18-8 bundles and solids	230.00 to 235.00
18-8 turnings	115.00 to 120.00
430 bundles and solids	130.00 to 135.00
410 turnings	55.00 to 60.00

Chicago

No. 1 hvy. melting	\$38.00 to \$39.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 dealer bundles	38.00 to 39.00
No. 1 factory bundles	44.00 to 45.00
No. 2 bundles	26.00 to 27.00
No. 1 busheling	38.00 to 39.00
Machine shop turn.	19.00 to 20.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	21.00 to 22.00
Low phos. forge crops	51.00 to 52.00
Low phos. punch'g's plate	
3/4 in. and heavier	50.00 to 51.00
Low phos. 2 ft and under	48.00 to 49.00
No. 1 RR hvy. melting	44.00 to 45.00
Scrap rails, random lgth.	54.00 to 55.00
Rerolling rails	62.00 to 63.00
Rails 2 ft and under	59.00 to 60.00
Angles and splice bars	53.00 to 54.00
RR steel car axles	60.00 to 62.00
RR couplers and knuckles	50.00 to 51.00
No. 1 machinery cast.	60.00 to 61.00
Cupola cast.	54.00 to 55.00
Cast iron wheels	45.00 to 46.00
Malleable	62.00 to 63.00
Stove plate	50.00 to 51.00
Steel car wheels	51.00 to 52.00
Stainless	
18-8 bundles and solids	210.00 to 215.00
18-8 turnings	110.00 to 115.00
430 bundles and solids	115.00 to 120.00
430 turnings	55.00 to 60.00

Philadelphia Area

No. 1 hvy. melting	\$39.00 to \$40.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	40.00 to 41.00
No. 2 bundles	26.00 to 28.00
No. 1 busheling	40.00 to 41.00
Machine shop turn.	19.00 to 20.00
Mixed bor. short turn.	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Shoveling turnings	23.00 to 24.00
Clean cast. chem. borings	27.00 to 28.00
Low phos. 5 ft and under	43.00 to 44.00
Low phos. 2 ft punch'g's	44.00 to 45.00
Elec. furnace bundles	41.00 to 42.00
Heavy turnings	33.00 to 34.00
RR specialties	45.00 to 46.00
Rails 18 in. and under	59.00 to 60.00
Cupola cast.	40.00 to 42.00
Heavy breakable cast.	44.00 to 45.00
Cast iron car wheels	45.00 to 46.00
Malleable	67.00 to 68.00
No. 1 machinery cast.	50.00 to 51.00

Cincinnati

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$35.50 to \$36.50
No. 2 hvy. melting	30.50 to 31.50
No. 1 dealer bundles	35.50 to 36.50
No. 2 bundles	25.00 to 26.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	18.00 to 19.00
Low phos. 18 in. and under	48.00 to 49.00
Rails, random length	48.00 to 49.00
Rails, 18 in. and under	56.00 to 57.00
No. 1 cupola cast.	47.00 to 48.00
Hvy. breakable cast.	43.00 to 44.00
Drop broken cast.	55.00 to 56.00

Youngstown

No. 1 hvy. melting	\$44.00 to \$45.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 dealer bundles	44.00 to 45.00
No. 2 bundles	27.50 to 28.50
Machine shop turn.	18.50 to 19.50
Shoveling turnings	23.50 to 24.50
Low phos. plate	45.00 to 46.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Cleveland

No. 1 hvy. melting	\$40.50 to \$41.50
No. 2 hvy. melting	33.50 to 34.50
No. 1 dealer bundles	40.50 to 41.50
No. 1 factory bundles	44.50 to 45.50
No. 2 bundles	24.00 to 25.00
No. 1 busheling	40.50 to 41.50
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	20.00 to 21.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Cut structural & plates, 2 ft and under	46.00 to 47.00
Drop forge flashings	40.50 to 41.50
Low phos. punch'g's plate	41.50 to 42.50
Foundry steel, 2 ft and under	40.00 to 41.00
Rails 2 ft and under	57.00 to 58.00
Rails 18 in. and under	58.00 to 59.00
Steel axle turnings	24.00 to 25.00
Railroad cast.	56.00 to 57.00
No. 1 machinery cast	54.00 to 55.00
Stove plate	51.00 to 52.00
Malleable	67.00 to 68.00
Stainless	
18-8 bundles	215.00 to 225.00
18-8 turnings	115.00 to 120.00
430 bundles	115.00 to 120.00

Buffalo

No. 1 hvy. melting	\$33.00 to \$34.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 busheling	33.00 to 34.00
No. 1 dealer bundles	33.00 to 34.00
No. 2 bundles	24.00 to 25.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	17.00 to 18.00
Low phos. plate	40.00 to 41.00
Structurals and plate, 2 ft and under	41.00 to 42.00
Scrap rails, random lgth.	39.00 to 40.00
Rails 2 ft and under	49.00 to 50.00
No. 1 machinery cast.	50.00 to 51.00
No. 1 cupola cast.	46.00 to 47.00

St. Louis

No. 1 hvy. melting	\$33.00 to \$34.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 dealer bundles	39.00 to 40.00
No. 2 bundles	23.00 to 24.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	19.00 to 20.00
No. 1 RR hvy. melting	40.00 to 41.00
Rails, random lengths	46.00 to 47.00
Rails, 18 in. and under	51.00 to 52.00
Angles and splice bars	47.00 to 48.00
RR specialties	46.00 to 47.00
Cupola cast.	54.00 to 55.00
Heavy breakable cast.	42.00 to 43.00
Stove plate	44.00 to 45.00
Cast iron car wheels	42.00 to 43.00
Rerolling rails	58.00 to 59.00
Unstripped motor blocks	42.00 to 43.00

Birmingham

No. 1 hvy. melting	\$35.00 to \$36.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 dealer bundles	35.00 to 36.00
No. 1 special bundles	38.00 to 39.00
No. 2 bundles	23.00 to 24.00
No. 1 busheling	38.00 to 39.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	14.00 to 15.00
Electric furnace bundles	38.00 to 39.00
Elec. furnace, 3 ft & under	36.00 to 37.00
Bar crops and plate	44.00 to 45.00
Structural and plate, 2 ft.	44.00 to 45.00
No. 1 RR hvy. melting	37.00 to 38.00
Scrap rails, random lgth.	46.00 to 47.00
Rails, 18 in. and under	52.00 to 53.00
Angles and splice bars	44.00 to 45.00
Rerolling rails	57.00 to 58.00
No. 1 cupola cast.	54.00 to 55.00
Cast iron car wheels	43.00 to 44.00
Unstripped motor blocks	42.00 to 43.00

New York

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$31.00 to \$32.00
No. 2 hvy. melting	27.00 to 28.00
No. 2 dealer bundles	20.00 to 21.00
Machine shop turnings	8.00 to 9.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	12.00 to 13.00
Clean cast. chem. borings	22.00 to 23.00
No. 1 machinery cast.	37.00 to 38.00
Mixed yard cast.	35.00 to 36.00
Heavy breakable cast.	33.00 to 34.00
Stainless	
18-8 prepared solids	195.00 to 200.00
18-8 turnings	85.00 to 90.00
430 prepared solids	85.00 to 90.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$34.00 to \$35.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 dealer bundles	38.00 to 39.00
No. 2 bundles	20.00 to 21.00
No. 1 busheling	36.00 to 37.00
Drop forge flashings	34.00 to 35.00
Machine shop turn.	13.00 to 14.00
Mixed bor. and turn.	15.00 to 16.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	15.00 to 16.00
Heavy breakable cast.	36.00 to 37.00
Mixed cupola cast.	45.00 to 46.00
Automotive cast.	50.00 to 51.00
Stainless	
18-8 bundles and solids	190.00 to 200.00
18-8 turnings	80.00 to 90.00
430 bundles and solids	85.00 to 95.00

Boston

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$29.00 to \$30.00
No. 2 hvy. melting	21.00 to 22.00
No. 1 dealer bundles	29.00 to 30.00
No. 2 bundles	15.00 to 16.00
No. 1 busheling	23.00 to 24.00
Machine shop turn.	9.00 to 9.50
Shoveling turnings	11.50 to 12.50
Clean cast. chem. borings	15.50 to 16.50
No. 1 machinery cast.	35.00 to 36.00
Mixed cupola cast.	36.00 to 37.00
Heavy breakable cast.	32.00 to 33.00

San Francisco

No. 1 hvy. melting	\$36.00
No. 2 hvy. melting	33.00
No. 1 dealer bundles	33.00
No. 2 bundles	22.00
Machine shop turn.	17.00
Cast iron borings	17.00
No. 1 cupola cast.	47.00

Los Angeles

No. 1 hvy. melting	\$38.00
No. 2 hvy. melting	36.00
No. 1 dealer bundles	33.00
No. 2 bundles	\$18.00 to 20.00
Machine shop turn.	16.00
Shoveling turnings	18.00
Cast iron borings	18.00
Elec. furn. 1 ft and under (foundry)	47.00 to 48.00
No. 1 cupola cast.	46.00 to 47.00

Seattle

No. 1 hvy. melting	\$35.00
No. 2 hvy. melting	33.00
No. 2 bundles	22.00
No. 1 cupola cast.	36.00
Mixed yard cast.	36.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$32.25
No. 2 hvy. melting	28.25
No. 1 dealer bundles	32.25
No. 2 bundles	22.75
Mixed steel scrap	32.25
Bush., new fact. prep'd	32.25
Bush., new fact., unprep'd	26.25
Machine shop turn.	14.00
Short steel turn.	17.00
Mixed bor. and turn.	13.00
Rails, rerolling	37.00
Cast scrap	\$46.50 to 48.00

Houston

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$34.00
No. 2 hvy. melting	31.00
No. 2 bundles	20.00
Machine shop turn.	16.00
Shoveling turnings	20.00
Cut structural plate	
2 ft. & under	\$45.50 to 46.50
Unstripped motor blocks	39.50 to 40.50
Cupola cast.	46.00 to 47.00
Heavy breakable cast.	29.00 to 30.00

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SINCE
1889



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Copper Users Are In Good Shape

Consumers will hardly know there's a strike—if it doesn't last too long.

They've enough metal in stock, and there's a good spot supply.

■ The Treasury in Denver had to pay over 34¢ per lb for its latest batch of copper against producers list of 30¢. But outside of this, the current strike that has hobbled 75 pct of U.S. copper capacity hasn't done any real damage to the consumers.

It won't either—if it doesn't last too long.

Ready to Drop—The plain fact is that if there had been no strike, the copper market would have sagged by now. Strike-fearing fabricators, almost without exception, had overbought.

Some are starting to worry out loud a little now about how long their current stocks will last. But with their steel inventories starting to thin out too, fabricators are planning carefully enough to go for an average of 60 days without buying a pound of copper.

Limited Sources—And if they do need some, they'll find plenty of sources. They'll be limited in the tonnage they can buy. And the buyer will pay a premium. But the metal is available.

First of all, secondary smelters are generally in very good position to handle more customers. For instance, in the Delaware Valley, one of the most active secondary non-ferrous production areas, the mem-

bers of the Philadelphia Metals Assn. who smelt copper say their inventories are in excellent shape. However, there is a weak spot here. Scrap generation is starting to dry up, so when this is gone there won't be much more until after the strike.

Importers Active—Importers and traders are known to have pretty good supplies of copper. The origin of this metal isn't always clear, though some observers say it's African, with some Chile-via-London metal. Many traders are holding back for a stronger price, but the metal is there.

And when the strikes are settled, the Government will be right there with some if its surplus metal to hold fabricators until producers and smelters can get pipelines going again. The Government hasn't officially committed itself to this yet. But the people who will make the decision definitely favor this action.

Price Status—The U. S. producers' price sits, almost meaninglessly, at 30¢ per lb. It is likely to stay there through the strike, especially if it lasts less than eight weeks. Copper company heads have said they don't intend to get priced out of the market, and will likely use this opportunity to prove it.

Whether the copper companies can reach a settlement on their own, independent of steel influences, is doubtful.

"You want to know how long the copper strikes will last, watch steel," says one copper executive. "The issues in the two industries, at least this time, are much too similar. When one settles, the other won't

be far behind."

Another copper man, familiar with the West, puts it more personally. "It has always been hard to keep a mine fully staffed during the summer," he says. "But when the first real fall wind starts blowing and people start thinking about winter, both sides will get down to some real hard negotiating."

Aluminum

The primary producers are probably through breaking output records for this year. The figures for August haven't been compiled, but there seems little doubt that production was off from the record levels of July.

Tin prices for the week: Aug. 26 —102.875; Aug. 27—103.00; Aug. 28 — 103.00; Aug. 31 — 103.00; Sept. 1—102.75.*

*Estimate.

Monthly Average Metal Prices

(Cents per lb except as noted)

Average prices of the major nonferrous metals in AUGUST based on quotations appearing in THE IRON AGE, were as follows:

Electrolytic copper, c'e'd	
Conn. Valley	20.00
Copper, Lake	20.00
Straits Tir, New York	192.327
Zinc, E. St. Louis	11.00
Lead, St. Louis	12.00
Aluminum ingot	26.80

Note: Quotations are on going prices

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum ingot	26.80	26.10	8/1/58
Copper (E)	30.00	31.50	7/13/59
Copper (CS)	30.00	29.50	8/7/59
Copper (L)	30.00	31.50	7/13/59
Lead, St. L.	12.00	11.00	8/24/59
Lead, N. Y.	13.00	12.00	8/24/59
Magnesium ingot	36.00	34.50	8/13/58
Magnesium pig	35.25	33.75	8/13/58
Nickel	74.00	64.50	12/6/58
Titanium sponge	150-180	162-182	8/1/59
Zinc, E. St. L.	11.00	11.50	2/25/59
Zinc, N. Y.	11.50	12.00	2/25/59

ALUMINUM: 99% Ingot **COPPER:** (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. **LEAD:** common grade. **MAGNESIUM:** 99.8% pig Velasco, Tex. **NICKEL:** Port Colborne, Canada. **ZINC:** prime western. **TIN:** See above; Other primary prices, pg. 115.

NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. customer's plant)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136	.250-3.
1100, 3003.....	45.7	43.8	42.8	43.3
5052.....	53.1	48.4	46.9	46.0
6061-0.....	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6-8.....	42.7-44.2	51.1-54.8
12-14.....	42.7-44.2	52.0-56.5
24-26.....	43.2-44.7	62.8-67.5
36-38.....	46.7-49.2	86.9-90.5

Screw Machine Stock—2011-T-3

Size"	3/4	3/8-5/8	3/4-1	1 1/4-1 3/4
Price.....	62.0	61.2	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length→	72	96	120	144
.019 gage.....	\$1.411	\$1.884	\$2.353	\$2.823
.024 gage.....	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping pt., carload frt. allowed)

Sheet and Plate

Type↓	Gage→	.250	.250-	.188	.081	.032
AZ31B Stand, Grade.....		67.9	69.0	77.9	103.1	
AZ31B Spec.....		93.3	95.7	105.7	171.3	
Tread Plate.....		70.6	71.7			
Tooling Plate.....	73.0					

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade. (AZ31C).....	65.3	65.3	66.1	71.5
Spec. Grade... (AZ31B).....	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting)..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A" Nickel Monel	Inconel
Sheet, CR.....	138	120
Strip, CR.....	124	108
Rod, bar, HR.....	107	89
Angles, HR.....	107	89
Plates, HR.....	130	110
Seamless tube.....	157	129
Shot, blocks.....	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper.....	54.13	.....	51.36	54.33
Brass, Yellow.....	47.24	47.78	47.18	50.65
Brass, Low.....	50.03	50.57	49.97	53.34
Brass, R L.....	51.02	51.56	50.96	54.33
Brass, Naval.....	51.90	.....	45.71	55.31
Muntz Metal.....	49.95	.....	45.26	.....
Comm. Br.....	52.55	53.09	52.49	55.61
Mang. Br.....	55.64	.....	49.30	.....
Phos. Br. 5%.....	73.92	.....	74.42	.....

Free Cutting Brass Rod..... 32.81

TITANIUM

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, \$7.25-\$8.50; alloy, \$13.40-\$17.00. Plate, HR, commercially pure, \$5.25-\$6.00; alloy, \$8.00-\$10.00. Wire, rolled and/or drawn, commercially pure, \$5.75-\$6.25; alloy, \$7.75-\$10.00; Bar, HR or forged, commercially pure, \$4.25-\$5.00; alloy, \$4.25-\$7.50; billets, HR, commercially pure, \$3.55-\$4.10; alloy, \$3.55-\$5.75.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex., 29.50
Beryllium Aluminum 5% Be, Dollar per lb contained Be.....\$74.75
Beryllium copper, per lb conta'd Be.....\$43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading.....\$71.50
Bismuth, ton lots.....\$ 2.25
Cadmium, del'd.....\$ 1.30
Calcium, 99.9% small lots.....\$ 4.55
Chromium, 99.8% metallic basis.....\$ 1.31
Cobalt, 97-99% (per lb).....\$1.75 to \$1.82
Germanium, per gm, f.o.b. Miami, Okla., refined.....\$33.30 to 42.00
Gold, U. S. Treas., per troy oz.....\$35.00
Indium, 99.9%, dollars per troy oz.....\$ 2.25
Iridium, dollars per troy oz.....\$75 to \$85
Lithium, 98%.....\$11.00 to \$14.00
Magnesium sticks, 100 to 500 lb..... 59.00
Mercury, dollars per 76-lb flask.....\$234 to \$236
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel..... 69.60
Palladium, dollars per troy oz.....\$18 to \$20
Platinum, dollars per troy oz.....\$77 to \$80
Rhodium.....\$120.00 to \$125.00
Silver ingots (\$ per troy oz.).....\$1.875
Thorium, per kg.....\$43.00
Vanadium.....\$ 3.45
Zirconium sponge.....\$ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
No. 115..... 29.25
No. 120..... 28.00
No. 123..... 27.00
80-10-10 ingot
No. 305..... 33.50
No. 315..... 31.50
88-10-2 ingot
No. 210..... 42.00
No. 215..... 37.75
No. 245..... 33.50
Yellow ingot
No. 405..... 23.75
Manganese bronze
No. 421..... 26.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
0.30 copper max.....25.00-25.25
0.60 copper max.....24.75-25.00
Piston alloys (No. 132 type).....26.75-27.75
No. 12 alum. (No. 2 grade).....23.50-24.00
108 alloy.....24.00-24.50
195 alloy.....26.50-27.50
13 alloy (0.60 copper max).....24.75-25.00
AXS-679 (1 pct zinc).....23.75-24.75

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97 1/2%.....24.00-25.00
Grade 2—92-95%.....22.75-23.75
Grade 3—90-92%.....21.75-22.75
Grade 4—85-90%.....21.25-22.25

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper.....	26	25 1/2
Yellow brass.....	19 1/2	17 1/2
Red brass.....	22 1/2	22 1/2
Comm. bronze.....	23 1/2	23 1/2
Mang. bronze.....	18 1/2	17 1/2
Free cutting rod ends.....	18 1/2	17 1/2

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire..... 25 1/2
No. 2 copper wire..... 24 1/2
Light copper..... 22
*Refinery brass..... 23 1/2
Copper bearing material..... 23
*Dry copper content.....

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire..... 25 1/2
No. 2 copper wire..... 24
Light copper..... 22
No. 1 composition..... 20 1/2
No. 1 comp. turnings..... 15 1/2
Hvy. yellow brass solids..... 15 1/2
Brass pipe..... 15 1/2
Radiators..... 16 1/2

Aluminum
Mixed old cast..... 14 —15
Mixed new clips..... 16 1/2 —17
Mixed turnings, dry..... 14 1/2 —15 1/2

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire..... 23 1/2 —24 1/2
No. 2 copper wire..... 21 1/2 —22 1/2
Light copper..... 19 1/2 —20 1/2
Auto radiators (unsweated)..... 13 1/2 —14
No. 1 composition..... 17 1/2 —18 1/2
No. 1 comp. turnings..... 16 1/2 —17 1/2
Cocks and faucets..... 13 1/2 —14 1/2
Clean heavy yellow brass..... 12 1/2 —13 1/2
Brass pipe..... 13 1/2 —14 1/2
New soft brass clippings..... 14 1/2 —15 1/2
No. 1 brass rod turnings..... 11 1/2 —12

Aluminum

Alum. pistons and struts..... 7 1/2 —8
Aluminum crankcase..... 11 1/2 —11 3/4
1100 (2s) aluminum clippings..... 15 —15 1/2
Old sheet and utensils..... 11 1/2 —11 3/4
Borings and turnings..... 7 —7 1/2
Industrial castings..... 11 1/2 —11 3/4
2030 (24S) clippings..... 12 1/2 —13

Zinc

New zinc clippings..... 4 1/2 —5 1/2
Old zinc..... 3 1/2 —3 3/4
Zinc routings..... 2 —2 1/2
Old die cast scrap..... 1 1/2 —2

Nickel and Monel

Pure nickel clippings..... 52-54
Clean nickel turnings..... 40
Nickel anodes..... 52-54
Nickel rod ends..... 40-41
New Monel clippings..... 30-32
Clean Monel turnings..... 20-23
Old sheet Monel..... 26-28
Nickel silver clippings, mixed..... 18
Nickel silver turnings, mixed..... 15

Lead

Soft scrap lead..... 8 1/2 —9 1/2
Battery plates (dry)..... 4 1/2 —4 3/4
Batteries, acid free..... 2 1/2 —2 3/4

Miscellaneous

Block tin..... 77 —78
No. 1 pewter..... 59 —60
Auto babbitt..... 40 —41
Mixed common babbitt..... 9 1/2 —10 1/2
Solder joints..... 14 —14 1/2
Siphon tops..... 42
Small foundry type..... 10 1/2 —10 3/4
Monotype..... 10 1/2 —10 3/4
Lino. and stereotype..... 9 1/2 —9 3/4
Electrotype..... 7 1/2 —8 1/2
Hand picked type shells..... 6 —6 1/2
Lino. and stereo. dross..... 2 1/2 —3 1/2
Electro dross..... 2 1/2 —3 1/2

(Effective Sept. 1, 1959)

IRON AGE

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

STEEL
PRICESBILLETS, BLOOMS,
SLABSPIL-
INGSHAPES
STRUCTURALS

STRIP

Carbon
Re-rolling
Net TonCarbon
Forging
Net TonAlloy
Net TonSheet
Steel

Carbon

Hi Str.
Low
AlloyCarbon
Wide-
FlangeHot-
rolledCold-
rolledHi Str.
H.R. Low
AlloyHi Str.
C.R. Low
AlloyAlloy
Hot-
rolledAlloy
Cold-
rolled

EAST

Bethlehem, Pa.

\$119.00 B3

5.55 B3

8.10 B3

5.55 B5

Buffalo, N. Y.

\$80.00 R3,
B3\$99.50 R3,
B3\$119.00 R3,
B3

6.50 B3

5.55 B3

8.10 B3

5.55 B3

5.10 B3,
R37.425 S10,
R7

7.575 B3

Phila., Pa.

7.875 P15

Harrison, N. J.

15.55 C11

Conshohocken, Pa.

\$104.50 A2

\$126.00 A2

5.15 A2

7.575 A2

New Bedford, Mass.

7.875 R6

Johnstown, Pa.

\$80.00 B3

\$99.50 B3

\$119.00 B3

5.55 B3

8.10 B3

Boston, Mass.

7.975 T8

New Haven, Conn.

7.875 D1

Baltimore, Md.

7.425 T8

15.90 T8

Phoenixville, Pa.

5.55 P2

5.55 P2

Sparrows Pt., Md.

5.10 B3

7.575 B3

New Britain,
Bridgeport,
Wallingford, Conn.

\$119.00 N8

7.875 W1, S7

Pawtucket, R. I.
Worcester, Mass.7.975 N7,
A515.90 N7
15.70 T8

MIDDLE WEST

Alton, Ill.

5.30 L1

Ashland, Ky.

5.10 A7

7.575 A7

Canton-Massillon,
Dover, Ohio

\$102.00 R3

\$119.00 R3,
\$114.00 T3

7.425 G4

10.80 G4

Chicago, Franklin Park,
Evanston, Ill.\$80.00 U1,
R3\$99.50 U1,
R3, W8\$119.00 U1,
R3, W8

6.50 U1

5.50 U1,
W8, P138.05 U1,
Y1, W8

5.50 U1

5.10 W8,
N4, A17.525 A1, T8,
M8

7.575 W8

8.40 W8,
S9, I315.55 A1,
S9, G4, T8

Cleveland, Ohio

7.425 A5, J3

10.75 A5

8.40 J3

Detroit, Mich.

\$119.00 R5

5.10 G3,
M27.425 M2, S1,
D1, P11

7.575 G3

10.80 S1

Anderson, Ind.

7.425 G4

Gary, Ind. Harbor,
Indiana

\$80.00 U1

\$99.50 U1

\$119.00 U1,
Y15.50 U1,
J38.05 U1,
J3

5.50 J3

5.10 U1,
J3, Y1

7.425 Y1

7.575 U1,
J3, Y1

10.90 Y1

8.40 U1,
Y1

Sterling, Ill.

\$80.00 N4

5.50 N4

7.75 N4

5.50 N4

5.20 N4

Indianapolis, Ind.

7.575 R5

15.70 R5

Newport, Ky.

5.10 A9

8.40 A9

Niles, Warren, Ohio
Sharon, Pa.\$99.50 S1,
C10

\$119.00 C10, S1

5.10 R3,
S17.425 R3,
T4, S17.575 R3,
S110.80 R3,
S1

8.40 S1

15.55 S1

Owensboro, Ky.

\$80.00 G5

\$99.50 G5

\$119.00 G5

Pittsburgh,
Midland, Butler,
Aliquippa,
McKeesport, Pa.\$80.00 U1,
P6\$99.50 U1,
C11, P6\$119.00 U1,
C11, B7

6.50 U1

5.50 U1,
J38.05 U1,
J3

5.50 U1

5.10 P6

7.425 J3, B4,
7.525 E3

8.40 S9

15.55 S9

Weirton, Wheeling,
Follansbee, W. Va.6.50 U1,
W3

5.50 W3

5.50 W3

5.10 W3

7.425 W5

7.575 W3

10.80 W3

Youngstown, Ohio

\$80.00 R3

\$99.50 Y1,
C10

\$119.00 Y1

8.05 Y1

5.10 U

7.425 Y1, R5

7.575 U1,
Y1

10.95 Y1

8.40 U1,
Y115.55 R5,
Y1

WEST

Fontana, Cal.

\$90.50 K1

\$109.00 K1

\$140.00 K1

6.30 K1

8.85 K1

6.45 K1

5.825 K1

9.20 K1

Geneva, Utah

\$99.50 C7

5.50 C7

8.05 C7

Kansas City, Mo.

5.60 S2

8.15 S2

8.65 S2

Los Angeles,
Torrance, Cal.

\$109.00 B2

\$139.00 B2

6.20 C7,
B2

8.75 B2

5.85 C7,
B2

9.30 C7, R5

9.60 B2

17.75 J3

Minneapolis, Colo.

5.80 C6

6.20 C6

9.375 C6

Portland, Ore.

6.25 O2

San Francisco, Niles,
Pittsburg, Cal.

\$109.00 B2

6.15 B2

8.70 B2

5.85 C7,
B2

Seattle, Wash.

\$109.00 B2

6.25 B2

8.80 B2

6.10 B2

SOUTH

Atlanta, Ga.

5.70 A8

5.10 A8

Fairfield, Ala. City,
Birmingham, Ala.

\$80.00 T2

\$99.50 T2

5.50 T2,
R3, C16

8.05 T2

5.10 T2,
R3, C16

7.575 T2

Houston, Lone Star,
Texas

\$104.50 S2

\$124.00 S2

5.60 S2

8.15 S2

8.65 S2

(Effective Sept. 1, 1959)

IRON AGE

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

STEEL
PRICES

STEEL PRICES		SHEETS							WIRE ROD	TINPLATE†		Holloware Enameling 29 ga.	
		Hot-rolled 18 ga. & hyvr.	Cold- rolled	Galvanized (Hot-dipped)	Enamel- ing	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* 1.25-lb. base box		Electro** 0.25-lb. base box
EAST	Buffalo, N. Y.	5.10 B3	6.275 B3				7.525 B3	9.275 B3		6.40 W6	† Special coated mfg. terme deduct 35c from 1.25-lb. coke base box price, 0.75 lb./0.25 lb. add 55c. Can-making quality BLACKPLATE 55 to 128 lb. deduct \$2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25c. **ELECTRO: 0.50-lb. add 25c; 0.75-lb. add 65c; 1.00-lb. add \$1.00. Differential 1.00 lb./0.25 lb. add 65c.		
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	5.15 A2	6.325 A2				7.575 A2						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.								6.40 B3				
	Fairless, Pa.	5.15 U1	6.325 U1				7.575 U1	9.325 U1			\$10.50 U1	\$9.20 U1	
	New Haven, Conn.												
	Phoenixville, Pa.												
Sparrows Pt., Md.	5.10 B3	6.275 B3	6.875 B3			7.525 B3	9.275 B3	10.025 B3	6.50 B3	\$10.40 B3	\$9.10 B3		
Worcester, Mass.									6.70 A5				
Trenton, N. J.													
MIDDLE WEST	Alton, Ill.									6.60 L1			
	Ashland, Ky.	5.10 A7		6.875 A7	6.775 A7		7.525 A7						
	Canton-Massillon, Dover, Ohio			6.875 R1, R3									
	Chicago, Joliet, Ill.	5.10 W8, A1					7.525 U1, W8			6.40 A5, R1, W8			
	Sterling, Ill.									6.50 N4, K2			
	Cleveland, Ohio	5.10 R3, J3	6.275 R3, J3	7.65 R3*	6.775 R3		7.525 R3, J3	9.275 R3, J3		6.40 A5			
	Detroit, Mich.	5.10 G3, M2	6.275 G3, M2				7.525 G3	9.275 G3					
	Newport, Ky.	5.10 A9	6.275 A9										
	Gary, Ind. Harbor, Indiana	5.10 U1, I3, Y1	6.275 U1, I3, Y1	6.875 U1, I3	6.775 U1, I3, Y1	7.225 U1	7.525 U1, Y1, I3	9.275 U1, Y1		6.40 Y1	\$10.40 U1, Y1	\$9.10 J3, U1, Y1	7.85 U1, Y1
	Granite City, Ill.	5.20 G2	6.375 G2	6.975 G2	6.875 G2							\$9.20 G2	7.95 G2
	Kokomo, Ind.			6.975 C9						6.50 C9			
	Mansfield, Ohio	5.10 E2	6.275 E2			7.225 E2							
	Middletown, Ohio		6.275 A7	6.875 A7	6.775 A7	7.225 A7							
	Niles, Warren, Ohio Sharon, Pa.	5.10 R3, S1	6.275 R3	6.875 R3 7.65 R3*	6.775 S1	7.225 S1*, R3	7.525 R3, S1	9.275 R3,				\$9.10 R3	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 U1, J3, P6	6.275 U1, J3, P6	6.875 U1, J3 7.50 E3*	6.775 U1		7.525 U1, J3	9.275 U1, J3	10.025 U1, J3	6.40 A5, J3, P6	\$10.40 U1, J3	\$9.10 U1, J3	7.85 U1, J3
	Portsmouth, Ohio	5.10 P7	6.275 P7							6.40 P7			
Weirton, Wheeling, Follansbee, W. Va.	5.10 W3, W5	6.275 W3, F3, W5	6.875 W3, W3 7.50 W3*		7.225 W3, W5	7.525 W3	9.275 W3			\$10.40 W5, W3	\$9.10 W5, W3	7.85 W5	
Youngstown, Ohio	5.10 U1, Y1	6.275 Y1	7.50 J3*	6.775 Y1		7.525 Y1	9.275 Y1		6.40 Y1				
WEST	Fontana, Cal.	5.825 K1	7.40 K1				8.25 K1	10.40 K1			\$11.95 K1	\$9.75 K1	
	Geneva, Utah	5.20 C7											
	Kansas City, Mo.									6.65 S2			
	Los Angeles, Torrance, Cal.									7.20 B2			
	Minneapolis, Colo.									6.65 C6			
	San Francisco, Niles, Pittsburg, Cal.	5.80 C7	7.225 C7	7.625 C7						7.20 C7	\$11.95 C7	\$9.75 C7	
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	5.10 T2, R3	6.275 T2, R3	6.875 T2, R3	6.775 T2					6.40 T2, R3	\$10.50 T2	\$9.20 T2	
	Houston, Texas									6.65 S2			

* Electrogalvanized sheets.

(Effective Sept. 1, 1959)

*7.425 at Sharon-Niles is 7.225.

IRON AGE

STEEL
PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

	BARS						PLATES				WIRE
	Carbon† Steel	Reinforc- ing	Cold Finished	Alloy Hot- rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.			6.725 B3	9.025 B3	8.30 B3					
	Buffalo, N. Y.	5.675 R3,B3	5.675 R3,B3	7.70 B5	6.725 B3,R3	9.025 B3,B5	8.30 B3	5.30 B3			8.00 W6
	Claymont, Del.						5.30 C4		7.50 C4	7.95 C4	
	Coatesville, Pa.						5.30 L4		7.50 L4	7.95 L4	
	Conschocken, Pa.						5.30 A2	6.375 A2	7.50 A2	7.95 A2	
	Harrisburg, Pa.						5.30 P2	6.375 P2			
	Milton, Pa.	5.825 M7	5.825 M7								
	Hartford, Conn.		8.15 R3		9.325 R3						
	Johnstown, Pa.	5.675 B3	5.675 B3		6.725 B3	8.30 B3	5.30 B3		7.50 B3	7.95 B3	8.00 B3
	Fairless, Pa.	5.825 U1	5.825 U1		6.875 U1						
	Newark, Camden, N. J.		8.10 W10, P10		9.20 W10, P10						
	Bridgeport, Putnam, Willimantic, Conn.		8.20 W10 8.15 J3	6.80 N8	9.175 N8						
	Sparrows Pt., Md.		5.675 B3				5.30 B3		7.50 B3	7.95 B3	8.10 B3
	Palmer, Worcester, Readville, Mansfield, Mass.		8.20 B5, C14		9.325 A5,B5						8.30 A5, W6
MIDDLE WEST	Spring City, Pa.		8.10 K4		9.20 K4						
	Alton, Ill.	5.875 L1									8.20 L1
	Ashland, Newport, Ky.						5.30 A7, A9		7.50 A9	7.95 A7	
	Canton, Massillon, Mansfield, Ohio	6.15* R3		7.65 R3,R2	6.725 R3 6.475 T5	9.025 R3,R2 8.775 T5	5.30 E2				
	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.675 U1,R3, W8,N4,P13	5.675 U1,R3, N4,P13,W8 5.875 L1	7.65 A5, W10,W8, B5,L2,N9	6.725 U1,R3, W8	9.025 A5, W10,W8, L2,N8,B5	5.30 U1,A1, W8,L3	6.375 U1	7.50 U1, W8	7.95 U1, W8	8.00 A5,R3, W8,N4, K2,W7
	Cleveland, Elyria, Ohio	5.675 R3	5.675 R3	7.65 A5,C13, C18		9.025 A5, C13,C18	5.30 R3,J3	6.375 J3		7.95 R3,J3	8.00 A5, C13,C18
	Detroit, Mich.	5.675 G3	5.675 G3	7.90 P3 7.85 P8,B5 7.65 R5	6.725 R5,G3	9.025 R5 9.225 B5,P3, P8	5.30 G3		7.50 G3	7.95 G3	
	Duluth, Minn.										8.00 A5
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 U1,I3, Y1	5.675 U1,I3, Y1	7.65 R3,J3	6.725 U1,I3, Y1	9.025 R3,M4	5.30 U1,I3, Y1	6.375 J3, J1	7.50 U1, Y1	7.95 U1, Y1,I3	8.10 M4
	Granite City, Ill.						5.40 G2				
	Kokomo, Ind.		5.775 C9								8.10 C9
	Sterling, Ill.	5.775 N4	5.775 N4				5.30 N4				8.10 K2
	Niles, Warren, Ohio Sharon, Pa.			7.65 C10	6.725 C10	9.025 C10	5.30 R3,S1		7.50 S1	7.95 R3, S1	
WEST	Owensboro, Ky.	5.675 G5			6.725 G5						
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 U1,J3	5.675 U1,J3	7.65 A5,B4, R3,J3,C11, W10,S9,C8, M9	6.725 U1,J3, C11,B7	9.025 A5, W10,R3,S9, C11,C8,M9	5.30 U1,J3	6.375 U1,J3	7.50 U1, J3,B7	7.95 U1, J3,B7	8.00 A5, J3,P6
	Portsmouth, Ohio										8.00 P7
	Weirton, Wheeling, Follansbee, W. Va.						5.30 W5				
	Youngstown, Ohio	5.675 U1,R3, Y1	5.675 U1,R3, Y1	7.65 A1,Y1, F2	6.725 U1,Y1	9.025 Y1,F2	5.30 U1,Y1		7.50 Y1	7.95 U1,Y1	8.00 Y1
	Emeryville, Fontana, Cal.	6.425 J5 6.375 K1	6.425 J5 6.375 K1		7.775 K1	9.00 K1	6.10 K1		8.30 K1	8.75 K1	
	Geneva, Utah						5.30 C7			7.95 C7	
	Kansas City, Mo.	5.925 S2	5.925 S2		6.975 S2	8.55 S2					8.25 S2
SOUTH	Los Angeles, Torrance, Cal.	6.375 C7,B2	6.375 C7,B2	9.10 R3,P14, S12	7.775 B2	11.00 P14, S12	8.625 B2				8.95 B2
	Minnequa, Colo.	6.125 C6	6.125 C6				6.15 C6				8.25 C6
	Portland, Ore.	6.425 O2	6.425 O2								
	San Francisco, Niles, Pittsburg, Cal.	6.375 C7 6.425 B2	6.375 C7 6.425 B2			8.675 B2					8.95 C7,C6
	Seattle, Wash.	6.425 B2,N6, A10	6.425 B2,A10			8.675 B2	6.20 B2		8.40 B2	8.85 B2	
	Atlanta, Ga.	5.875 A8	5.875 A8								8.00 A8
	Fairfield City, Ala. Birmingham, Ala.	5.675 T2,R3, C16	5.675 T2,R3, C16	8.25 C16		8.30 T2	5.30 T2,R3			7.95 T2	8.00 T2,R3
	Houston, Ft. Worth, Lone Star, Texas	5.925 S2	5.925 S2		6.975 S2	8.55 S2	5.40 S2		7.60 S2	8.05 S2	8.25 S2

† Merchant Quality—Special Quality 35¢ higher.

(Effective Sept. 1, 1959)

* Special Quality.

THE IRON AGE, September 3, 1959

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.
A10 Alaska Steel Mills, Inc., Seattle, Wash.
B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Steel Co., Pacific Coast Div.
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.
C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Claymont Products Dept., Claymont, Del.
C4 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shifting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.
D1 Detroit Steel Corp., Detroit
D2 Driver, Wilbur B., Co., Newark, N. J.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.
E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeves Steel Corp., Mansfield, O.
E3 Enamel Products & Plating Co., McKeesport, Pa.
F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owenboro, Ky.
H1 Hanna Furnace Corp., Detroit
H2 Ingersoll Steel Div., New Castle, Ind.
H3 Inland Steel Co., Chicago, Ill.
H4 Interlake Iron Corp., Cleveland
J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.
K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.
L1 Lackde Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.
M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Chicago, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.
N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.
O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland
P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Steel Corp., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit

P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.
R1 Reeves Steel & Mfg. Div., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebbing Sons Co., John A., Trenton, N. J.
R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.
S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham
S12 Sierra Drawn Steel Corp., Los Angeles, Calif.
S13 Seymour Mfg. Co., Seymour, Conn.
T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston
U1 United States Steel Corp., Pittsburgh
U2 Universal Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham
W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.
Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about \$200 per net ton.

STANDARD T. & C.	BUTTWELD												SEAMLESS							
	1/2 in.		3/4 in.		1 in.		1 1/4 in.		1 1/2 in.		2 in.		2 1/2 in.		3 in.		3 1/2 in.		4 in.	
	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.
Sparrows Pl. B3	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50						
Youngstown R3	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50						
Fontana K1	*10.75	*26.00	*7.75	*22.00	*4.25	*17.50	*1.75	*16.75	*1.25	*15.75	*0.75	*15.25	0.75	*15.50						
Pittsburgh J3	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0
Alton, Ill. L1	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50						
Sharon M3	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50						
Fairless N2	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50						
Pittsburgh N1	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0
Wheeling W5	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50						
Wheatland W4	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50						
Youngstown Y1	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0
Indiana Harbor Y1	1.25	*14.0	4.25	*10.0	7.75	*5.50	10.25	*4.75	10.75	*3.75	11.25	*3.25	12.75	*3.50						
Lorain N2	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0
EXTRA STRONG PLAIN ENDS																				
Sparrows Pl. B3	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50						
Youngstown R3	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50						
Fairless N2	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50						
Fontana K1	*6.25		*2.25		0.75		1.25		1.75		2.25		2.75							
Pittsburgh J3	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50
Alton, Ill. L1	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50						
Sharon M3	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50						
Pittsburgh N1	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50
Wheeling W5	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50						
Wheatland W4	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50						
Youngstown Y1	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50
Indiana Harbor Y1	5.75	*8.0	9.75	*4.0	12.75	0.50	13.25	*0.75	13.75	0.25	14.25	0.75	14.75	*0.50						
Lorain N2	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50

Threads only, butt weld and seamless, 2 1/4 pt. higher discount. Plain ends, butt weld and seamless, 3-in. and under, 5 1/4 pt. higher discount.

Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: 1/2, 3/4 and 1-in., 2 pt.; 1 1/4, 1 1/2 and 2-in., 1 1/2 pt.; 2 1/2 and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2 1/2 and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.00¢ per lb.

(Effective Sept. 1, 1959)

TOOL STEEL

F.o.b. mill	W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	—	\$1.84	T-1
18	4	1	—	—	5	2.545	T-4
18	4	1	—	—	—	2.005	T-2
1.5	4	1.5	8	—	—	1.20	M-1
6	4	3	8	—	—	1.59	M-3
6	4	2	5	—	—	1.315	M-2
High-carbon chromium..							.955 D-3, D-5
Oil hardened manganese							.505 O-2
Special carbon .....							.38 W-1
Extra carbon .....							.38 W-1
Regular carbon .....							.325 W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

Cladding	Plate (L4, C4, A3, J2)			Sheet (J2)	
	10 pct	15 pct	20 pct	20 pct	
302					37.50
304	28.80	31.55	34.30		40.00
316	42.20	46.25	50.25		58.75
321	34.50	37.75	41.05		47.25
347	40.80	44.65	48.55		57.00
405	24.60	26.90	29.25		
410	22.70	24.85	27.00		
420	23.45	25.65	27.90		

CR Strip (S9) Copper, 10 pct, 2 sides, 42.50; 1 side, 35.85.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	The Plates	Track Bolts Untreated
Bessemer U/I	5.75	6.725	7.25			
Cleveland R3						15.35
So. Chicago R3				10.10		
Ensley T2	5.75	6.725				
Fairfield T2	6.725			10.10	6.875	
Gary U/I	5.75				6.875	
Huntington, C16		6.725				
Ind. Harbor J3				10.10		
Johnstown B3	6.725		7.25			
Joliet U/I				10.10		15.35
Kansas City S2						
Lackawanna B3	5.75	6.725	7.25		6.875	
Lebanon B3			7.25			15.35
Minnequa C6	5.75	7.225	7.25	10.10	6.875	15.35
Pittsburgh P3						14.75
Pittsburgh J3				10.10		
Seattle B2					6.75	15.85
Steelton B3	5.75		7.25		6.875	
Struthers V1				10.10		
Torrance C7					6.75	
Williamport S5	6.725					
Youngstown R3				10.10		

COKE

Furnace, beehive (f.o.b.)	Net-Ton
Connellsville, Pa.	\$14.50 to \$15.50
Foundry, beehive (f.o.b.)	\$18.50
Foundry oven coke	
Buffalo, del'd	\$33.25
Detroit f.o.b.	32.00
New England, del'd	33.55
New Haven, f.o.b.	31.00
Kearney, N. J., f.o.b.	31.25
Philadelphia, f.o.b.	31.00
Swedeland, Pa., f.o.b.	31.00
Painesville, Ohio, f.o.b.	31.35
Erle, Pa., f.o.b.	32.00
Cleveland, del'd	34.19
Cincinnati, del'd	32.84
St. Paul, f.o.b.	31.25
St. Louis, f.o.b.	33.00
Birmingham, f.o.b.	30.35
Milwaukee, f.o.b.	32.00
Neville Is., Pa.	30.75

LAKE SUPERIOR ORES

51.50% Fe natural, delivered lower Lake ports. Interim prices for 1959 season. Freight changes for seller's account.	
Openhearth lump	\$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length)	
		Semi-Processed	Fully Processed
Field	11.70	9.875	
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor	13.55	12.475	
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30		
Grain Oriented			
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: Aliquippa (J3); Beech Bottom (W5); Brackenridge (A3); Granite City (G2); Indiana Harbor (I3); Mansfield (E2); Newport, Ky. (A9); Niles, O. (S1); Vandergrift (U); Warren, O. (R3); Zanesville, Butler (A7).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE			CARBON*		
Diam. (in.)	Length (in.)	Price	Diam. (in.)	Length (in.)	Price
24	84	27.25	40	100, 110	12.50
20	72	26.50	35	110	11.20
18	72	27.50	30	110	11.70
14	72	27.25	24	72	11.95
12	72	28.25	20	90	11.55
10	60	29.50	17	72	12.10
10	48	30.00	14	72	12.55
7	60	29.75	10	60	13.80
6	60	33.25	8	60	14.25
4	40	37.00			
3	40	39.25			
2 1/2	30	41.50			
2	24	64.00			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Super duty, Mo., Pa., Md., Ky.	\$185.00
High duty (except Salina, Pa., add \$5.00)	140.00
Medium duty	125.00
Low duty (except Salina, Pa., add \$2.00)	103.00
Ground fire clay, net ton, bulk.	22.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	\$158.00
Childs, Hays, Latrobe, Pa.	163.00
Chicago District	168.00
Western Utah	183.00
California	165.00
Super Duty	
Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	163.00-168.00
Silica cement, net ton, bulk, Latrobe	29.75
Silica cement, net ton, bulk, Chicago	26.75
Silica cement, net ton, bulk, Ensley, Ala.	27.75
Silica cement, net ton, bulk, Mt. Union	25.75
Silica cement, net ton, bulk, Utah and Calif.	39.00

Chrome Brick

Standard chemically bonded, Balt.	\$109.00
Standard chemically bonded, Curt-ner, Calif.	119.00
Burned, Balt.	103.00

Magnesite Brick

Standard, Baltimore	\$140.00
Chemically bonded, Baltimore	119.00

Grain Magnesite St. % to 1/2-in. grains

Domestic, f.o.b. Baltimore in bulk.	\$73.00
Domestic, f.o.b. Chewalab, Wash., Lunenburg, Nev.	
In bulk	46.00
In sacks	\$52.00-54.00

Dead Burned Dolomite

Per net ton	
F.o.b. bulk, producing points in:	
Pa., W. Va., Ohio	\$16.75
Missouri Valley	15.60
Midwest	17.00

(Effective Sept. 1, 1959)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Canted Nails						Single Loop Bale Ties	Galv. Barbed and Twisted Barbed Wire	Merch. Wire Ann'd	Merch. Wire Galv.
	Col	Col	Col	Col	Col	Col				
Alabama City R3	173	187	192	212	193	9.00	9.55			
Aliquippa J3***	173	190	192	219	203	9.10	9.675			
Atlanta A8**	175	192	194	218	198	8.75	9.425			
Bartonsville K2**	175	192	178	214	198	9.10	9.775			
Buffalo W6						9.00	9.55*			
Chicago N4**	177	190	172	212	196	9.00	9.70			
Chicago R3						9.00	9.55			
Cleveland A6										
Crawfords M4**	175	192	214	198	9.10	9.775				
Donner, Pa. A5	173	187	212	193	9.00	9.55				
Duluth A5	173	187	212	193	9.00	9.55				
Fairfield, Ala. T2	173	187	212	193	9.00	9.55				
Galveston D4	9.10									
Houston S2	178	192	217	198	9.25	9.80				
Jacksonville M4	184-1	197	219	203	9.10	9.775				
Johnstown B3**	175	190	172	212	196	9.00	9.70			
Joliet, Ill. A5	173	187	212	193	9.00	9.55				
Kokomo C9	175	189	214	195*	9.10	9.65*				
L. Angeles B2**						9.95	10.625			
Kansas City S2*	178	192	217	198*	9.25	9.80				
Minnequa C6	178	192	182	217	198	9.25	9.80			
Monessen P6						9.30	9.325			
Palmer, Mass. W6						9.30	9.85			
Pittsburg, Cal. C7	192	210	213	9.60	10.15					
Rainier, Pa. A5	173	187	212	193	9.00	9.55				
So. Chicago R3	173	187	212	193	9.00	9.55				
S. San Fran. C6			236	9.95	10.50					
Sparrows Pt. B3**	175		214	198	9.10	9.775				
Struthers, O. Y1*					8.65	9.20				
Worcester A5	179				9.30	9.85				
Williamport S3										

* Zinc less than .10¢. ***.10¢ zinc.

** 11-12¢ zinc. † Plus zinc extras.

‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT				
	0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Anderson, Ind. G4	8.95	10.40	12.60	15.60	18.55
Baltimore, Md. T8	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. W12	9.50	10.70	12.90	15.90	18.85
Boston T8	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. R7	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. S9	8.95	10.40	12.60	15.60	18.55
Chicago				15.60	
Cleveland A5	8.95	10.40	12.60	15.60	18.55
Dearborn S1	9.05	10.50	12.70	15.70	
Detroit D1	9.05	10.50	12.70		
Dover, O. G4	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. M8	9.05	10.40	12.60		
Franklin Park, Ill. T8	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. C11	9.05	10.40	12.60	15.60	18.55
Indianapolis R5	9.10	10.55	12.60	15.60	18.55
Los Angeles C1	11.15	12.60	14.80	17.80	
New Britain, Conn. S7	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. B4	8.95	10.40	12.60	15.60	
New Haven, Conn. D1	9.40	10.70	12.90	15.90	
Pawtucket, R. I. N7	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. A1	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. S1	8.95	10.40	12.60	15.60	18.55
Trenton, R4		10.70	12.90	15.90	18.85
Wallingford W1	9.40	10.70	12.90	15.90	18.85
Warren, Ohio T4	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. A5	9.50	10.70	12.90	15.90	18.85
Youngstown R3	9.10	10.55	12.60	15.60	18.55

BOILER TUBES

\$ per 100 ft. carload lots cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld
	OD. in.	B.W. Gs.	H.R.	C.D.	H.R.
Babcock & Wilcox...	2	13	40.28	47.21	35.74
	2½	12	54.23	63.57	48.13
	3	12	62.62	73.40	55.59
	3½	11	73.11	85.79	65.84
	4	10	97.08	113.80	88.10
National Tube....	2	13	40.28	47.21	35.74
	2½	12	54.23	63.57	48.13
	3	12	62.62	73.40	55.59
	3½	11	73.11	85.79	65.84
	4	10	97.08	113.80	88.10
Pittsburgh Steel...	2	13	40.28	47.21	.....
	2½	12	54.23	63.57	.....
	3	12	62.62	73.40	.....
	3½	11	73.11	85.79	.....
	4	10	97.08	113.80	.....

METAL POWDERS

Cents per lb, minimum truckload, delivered E. of Miss. River, unless otherwise noted.

Iron Powders

Compacting Powders

Electrolytic, imported, f.o.b.	29.50 to 33.00
Electrolytic, domestic	34.50
Sponge	11.25
Atomized	11.25
Hydrogen Reduced	11.25 to 12.00
Carbonyl	88.00
Welding Powders*	8.10
Cutting and Scarfing Powders*	9.10

Copper Powders

Electrolytic, domestic	41.00
Precipitated	40.50 to 45.00
Atomized	39.80 to 48.30
Hydrogen reduced, f.o.b.	43.25
Bronze	47.20 to 51.50
Chromium, electrolytic	55.00
Lead	19.00
Manganese, f.o.b.	42.00
Molybdenum	\$3.60 to \$3.95
Nickel	\$1.05 to \$1.03
Nickel Silver	53.50
Nickel Steel	13.00
Solder	13¢ plus metal value
Stainless Steel, 302	\$1.07
Stainless Steel, 316	\$1.26
Steel, atomized, prealloyed, 4600 series	14¢ plus metal value
Tin	4600 series
Titanium, 99.25+%, per lb., f.o.b.	\$11.25
Tungsten	\$3.15 (nominal)

* F.O.B., shipping point.

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)
Pct. Discounts

Bolts	1-4 Containers	5 Containers	20,000 Lb.	40,000 Lb.
Machine				
1/2" and smaller x 3" and shorter	55	57	61	62
5/8" diam. x 3" and shorter	47	49 1/4	54	55
3/4" thru 1" diam x 6" and shorter	37	39 1/4	45	46
3/4" thru 1" diam, longer than 6" and 1 1/2" and larger x all lengths	31	34	40	41
Roller thread, 3/4" and smaller x 3" and shorter	55	57	61	62
Carriage, lag, plow, tap, blank, step, elevator and fitting up bolts 1/2" and smaller x 6" and shorter	48	50 1/4	55	56

Note: Add 25 pct for less than container quantity. Distributor prices are 5 pct less on bolts and square nuts.

Nuts, Hex, HP reg. & hvy.

	Full case or Keg price
1/2 in. or smaller	62
3/4 in. to 1 1/2 in. inclusive	56
1 1/2 in. and larger	51 1/2

C. P. Hex, reg. & hvy.

	Full case or Keg price
1/2 in. or smaller	62
3/4 in. to 1 1/2 in. inclusive	56
1 1/2 in. and larger	51 1/2

Hot Galv. Hex Nuts (All Types)

1/2 in. and smaller	41
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Semi-finished Hex Nuts

1/2 in. or smaller	62
3/4 in. to 1 1/2 in. inclusive	56
1 1/2 in. and larger	51 1/2
(Add 25 pct for broken case or keg quantities)	

Finished

1/2 in. and smaller	65
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Rivets

	Base per 100 lb
1/2 in. and larger	\$12.85
7/16 in. and smaller	Pct. Off List 15

Cap Screws

	Discount (Packages)
New std. hex head, packaged	Full Case

1/2" diam. and smaller x 6" and shorter	54	42
3/4", 1", and 1 1/2" diam. x 6" and shorter	38	23
1/2" diam. and smaller x longer than 6"	..	..
3/4", 1", and 1 1/2" diam. x longer than 6"	..	..
1/4" through 5/8" dia. x 6" and shorter	59	48
5/8" through 1" dia. x 6" and shorter	45	32
Minimum quantity—1/4" through 3/8" diam., 15,000 pieces; 7/16" through 5/8" diam., 5,000 pieces; 3/4" through 1" diam., 2,000 pieces.		

Machine Screws & Stove Bolts

	Discount	
	Mach. Screws	Stove Bolts
Plain Finish	60	60
Cartons Bulk		
To 1/4" diam.	Quantity	
1/4" thru 1" diam. incl.	25,000-and over	60
5/16 to 1/2" diam. incl.	15,000-200,000	60

Machine Screws & Stove Bolt Nuts

	Discount	
	Hex	Square
In Cartons	16	19
In Bulk	Quantity	
1/2" diam. & smaller	25,000-and over	15

STEEL SERVICE CENTERS

Metropolitan Price, dollars per 100 lb.														
Cities	City Delivery Charge	Sheets			Strip	Plates	Shapes	Bars		Alloy Bars				
		Hot-Rolled (18 ga. & hvy.)	Cold-Rolled (15 gauge)	Galvanized (10 gauge)††	Hot-Rolled	Standard Structural	Hot-Rolled (merchant)	Cold-Finished	Hot-Rolled 4615 As rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 4615 As rolled	Cold-Drawn 4140 Annealed		
Atlanta		8.59	9.87	10.13	8.91	9.29	9.40	9.39	13.24*					
Baltimore	\$.10	8.65	9.35	9.09	9.15	9.10	9.65	9.55	11.80*	16.28	15.28	19.82	19.08	
Birmingham		8.18	9.45	10.46	8.51	8.89	9.00	8.99						
Boston**	10	10.52	11.27	11.82	12.17	10.42	10.72	10.34	13.45*	16.79	16.69	20.29	21.04	
Buffalo**	15	9.80	10.50	11.35	11.30	10.25	10.40	9.90	11.60*	16.34	16.45	19.01	20.80	
Chicago**	15	8.69	10.35	11.05	10.35	8.62	9.16	8.79	10.80	16.20	16.10	19.70	20.45	
Cincinnati**	15	8.86	10.41	11.10	10.67	9.00	9.84	9.11	11.68*	16.52	16.42	20.02	20.77	
Cleveland**	15	8.69	9.89	11.02	10.47	8.88	9.67	8.90	11.40*	16.31	16.21	19.81	20.56	
Denver	20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19				20.84	
Detroit**	15	8.95	10.61	11.40	10.72	8.99	9.84	9.10	11.16	15.46	16.38	18.81	21.03	
Houston		8.10	8.60		8.15	8.45	8.05	8.10	11.60	16.20	15.25	19.65	18.95	
Kansas City	15	9.02	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62	
Los Angeles**		9.95	11.55	12.20	11.55	10.00	10.00	9.10	14.20	17.30	16.45	21.30	20.80	
Memphis	15	8.55	9.80		8.60	8.93	9.01	8.97	12.11*					
Milwaukee**	15	8.83	10.49	11.19	10.49	8.76	9.30	8.93	11.04	16.34	15.34	19.84	19.09	
New York**	10	10.52	10.59	11.40	12.14	10.77	10.84	10.09	13.35*	16.16	16.50	20.10	20.85	
Norfolk	20	8.20			8.90	8.65	9.20	8.90	10.70					
Philadelphia**	10	9.55	10.10	10.71	11.75	10.15	10.20	9.50	12.05*	16.58	16.48	20.08	20.83	
Pittsburgh**	15	8.69	9.84	10.91	10.45	8.62	9.78	8.79	11.40*	16.20	16.10	19.70	20.45	
Portland		10.00	11.75	13.30	11.95	11.50	11.10	9.85	15.30*	18.50	17.45	20.75	20.25	
San Francisco**	10	11.00	11.95	11.50	12.25	11.00	10.95	10.75	15.20	17.05	16.35	21.05	20.60	
Seattle**		11.55	12.30	12.50	12.65	11.00	10.20	11.10	16.20	17.15	17.80	20.65	22.29	
Spokane**	15	11.70	12.45	12.65	13.30	11.15	11.35	11.75	16.35	17.75	17.95	21.55	22.35	
St. Louis**	15	9.07	10.73	11.02	10.73	9.00	9.76	9.17	11.43	16.58	16.48	20.08	19.33	
St. Paul	15	8.94	9.31	10.47	8.99	9.45	9.53	9.70	11.49		15.41		20.83	

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. **These cities are on net pricing. Prices shown are for 2000 lb item quantities of the following: Hot-rolled sheet—10 ga. x 36 x 96—120; Cold-rolled sheet—20 ga x 36 x 96—120; Galv. sheet—10 ga x 36—120; Hot-rolled strip—3/4" x 1"; Plate—1/4" x 84"; Shapes—1-Beams 6 x 12.5; Hot-rolled bar—Rounds—3/4"-2 15/16"; * C 1018—1" rounds. †† 10¢ zinc. ‡ Deduct for country delivery. † 15 ga. & heavier; ‡ 14 ga. & lighter.

(Effective Sept. 1, 1959)

PIG IRON

Dollars per gross ton, L.o.b.,
subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. B6	68.00	68.50	69.00	69.50	.....
Birmingham R3	62.00	62.50*	63.00	63.50	.....
Birmingham W9	62.00	62.50*	63.00	63.50	.....
Birmingham U4	62.00	62.50*	63.00	63.50	.....
Buffalo R3	66.00	66.50	67.00	67.50	.....
Buffalo H1	66.00	66.50	67.00	67.50	.....
Buffalo W6	66.00	66.50	67.00	67.50	.....
Chester P2	68.00	68.50	69.00	69.50	.....
Chicago J4	66.00	66.50	67.00	67.00	.....
Cleveland A5	66.00	66.50	67.00	67.00	71.00†
Cleveland R3	66.00	66.50	67.00	67.00	.....
Duluth J4	66.00	66.50	67.00	67.00	71.00†
Erie J4	66.00	66.50	67.00	67.00	71.00†
Everett M6	67.50	68.00	68.50	69.00	.....
Fontana K1	75.00	75.50	76.00	76.50	.....
Genese, Utah C7	66.00	66.50	67.00	67.50	.....
Granite City G2	67.00	67.50	68.00	68.50	.....
Hubbard Y1	66.00	66.50	67.00	67.50	.....
Ironton, Utah C7	66.00	66.50	67.00	67.50	.....
Midland C11	66.00	66.50	67.00	67.50	.....
Minneapolis C6	68.00	68.50	69.00	69.50	.....
Monessen P6	66.00	66.50	67.00	67.50	71.00†
Neville Is. P4	66.00	66.50	67.00	67.50	71.00†
N. Tonawanda T1	66.00	66.50	67.00	67.50	.....
Sharpville S3	66.00	66.50	67.00	67.50	.....
Sa. Chicago R3	66.00	66.50	67.00	67.50	.....
Sa. Chicago W8	66.00	66.50	67.00	67.50	.....
Swedeland A2	68.00	68.50	69.00	69.50	.....
Toledo J4	66.00	66.50	67.00	67.50	.....
Troy, N. Y. R3	68.00	68.50	69.00	69.50	73.00
Youngtown Y1	66.00	66.50	67.00	67.50	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, \$2 per ton for 0.50 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Add \$1.00 for 0.31-0.69 pct phos.

Silvery iron: Buffalo (6 pct), H1, \$79.25; Jackson J1, J4 (Globe Div.), \$78.00; Niagara Falls (15.01-15.50), \$101.00; Kokuk (14.01-14.50), \$103.50; (15.51-16.00), \$106.50. Add \$1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add \$1.25 for each 0.50 pct manganese over 1.00 pct. Dease-silver pig iron (under .10 pct phos.): \$64.00. Add \$1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Ferroalloy prices will next appear in the Sept. 10 issue.)

Base price cents per lb. L.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingot, reroll.	22.75	24.75	24.00	26.25	—	28.00	41.25	33.50	38.50	—	17.50	—	17.75
Slabs, billets	28.00	31.50	29.00	32.75	33.25	34.50	51.25	41.50	48.25	—	22.25	—	22.50
Billets, forging	—	37.75	38.75	39.50	42.50	42.00	64.50	48.75	57.75	29.25	29.25	29.75	29.75
Bars, struct.	43.50	44.50	46.00	46.75	49.75	49.50	75.75	57.50	67.25	35.00	35.00	35.50	35.50
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	—	42.25	43.50	44.25	47.25	47.00	71.75	54.50	63.75	33.25	33.25	33.75	33.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; Vandergrift, Pa., U1; Washington, Pa., W2, J2; Baltimore, El; Middletown, O., A7; Massillon, O., R3; Gary, U1; Bridgeville, Pa., U2; New Castle, Ind., I2; Detroit, M2; Louisville, O., R5.

Strip: Midland, Pa., C11; Waukegan, Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Leechburg, Pa., A3; Bridgeville, Pa., U2; Detroit, M2; Canton, Massillon, O., R3; Harrison, N. Y., D3; Youngstown, R3; Sharon, Pa., S1; Butler, Pa., A7; Wallingford, Conn., U3 (plus further conversion extras); W1 (25¢ per lb. higher); Seymour, Conn., S13, (25¢ per lb. higher); New Bedford, Mass., R6 Gary, U1, (25¢ per lb. higher); Baltimore, Md., El (300 series only).

Bar: Baltimore, A7; S. Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1, F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, A5; Canton, O., T3, R3; Ft. Wayne, H; Detroit, R5; Gary, U1; Owensboro, Ky., G5; Bridgeport, Conn., N8; Ambridge, Pa., B7.

Wire: Waukegan, A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, J4; Newark, N. J., D2; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, P1; Syracuse, C11; Bridgeville, U2; Detroit, R5; Reading, Pa., C2; Bridgeport, Conn., N8.

Structurals: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, C11; S. Chicago, U1.

Plates: Ambridge, Pa., B7; Baltimore, El; Brackenridge, Pa., A3; Chicago, U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., I2; Middletown, A7; Washington, Pa., J7; Cleveland, Massillon, R3; Coatesville, Pa., C15; Vandergrift, Pa., U1; Gary, U1.

Forging billets: Ambridge, Pa., B7; Midland, Pa., C11; Baltimore, A7; Washington, Pa., J2; McKeesport, F1; Massillon, Canton, O., R3; Watervliet, A3; Pittsburgh, Chicago, U1; Syracuse, C11; Detroit, R5; Munhall, Pa., S. Chicago, U1; Owensboro, Ky., G5; Bridgeport, Conn., N8; Reading, Pa., C2.

(Effective Sept. 1, 1959)

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Aluminum Company of America's
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IN EXCELLENT CONDITION
MUST BE SOLD AT ONCE
Various Sizes, Clear Spans
All with Overhead Cranes
Easily Dismantled
Ideal for Re-erection

HEAVY ELECTRICAL EQUIPMENT

Including motors, generators, transformers, converters, rectifiers, controls, etc.

Rotary BALL-MILL, cement mixer batch plant, foundry items, gas producer machines, crushers, blowers, scales, heavy carts, crane boxes, bucket and belt conveyors, hydropneumatic accumulator, etc.

Structural steel shapes, pipe, valves, grating, overhead doors, steel & wood silos and numerous other items.

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WITH INEXPENSIVE Safety Glasses Like These



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"SAFEMASTER"
(Nickel silver frame
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When you give your employees American Optical safety glasses such as our Ultrascopic line, you obtain results! One user reports savings as follows:

- 1 Lost production time and medical costs down from \$5.17 per year per employee to \$.56.
- 2 Lost production time per employee per year down from 1.67 hours to 1/10th of an hour.
- 3 Lost production hours in dollars down from \$3.36 per employee to \$.23.

Ask your Safety Director about these safety glasses. He knows there is no substitute for quality in safety! Your nearest AO Safety Products Representative can supply you.

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All Types
SERVICE-TESTED
FREIGHT CAR REPAIR
PARTS
For All Type of Cars

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44-Ton Standard Gauge
In ICC Operating Condition

10 Covered Hopper Cars
70-Ton Capacity, Standard Gauge

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(3)—3500-KW Allis-Chalmers 5-unit sets consist of (2) 1750 KW Gen., 350/700-VDC, (1) 5000-HP syn. motor, 13800/6900/4160-V, 3 ph., 60 cy., (2) exciter generators.

(1)—S. & S. 5-unit set consists of—(1) 2500-HP syn. motor, 11000/4160-V, 3 ph., 60 cy., (1) 1060-KW Gen. 600-BDC, (2) 760-KW Gen. 600-VDC, (1) exciter gen. (Will split this set to fit your requirements.)

(1)—200-KW set consisting of (2) 1000-KW gen. 600-VDC, (1) 2500-HP syn. motor, 11000/-4160-V, 3 ph., 60 cy.

(1)—1875-KW Whse. 2-unit set—(1) 250-VDC gen., (1) 2700-HP syn. motor, 13800/6900/-4160-V, 3 ph., 60 cy.

(1)—1250-KW Gen., Elec. 2-unit set—(1) 132/265-VDC gen., (1) 1750-HP syn. motor, 4160-V, 3 ph., 60 cy.

(1)—850-KW Gen. Elec. 2-units set—(1) 250/300-VDC gen., (1) 1250-HP syn. motor, 13800/-6900/4160-V, 3 ph., 60 cy.

MOTORS

(1)—2200 H.P. Westinghouse motor, 600 BDC., 92/132 R. P. M.

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THE CLEARING HOUSE

New Auction Method: Closed-Circuit TV

Used machinery will be sold on closed-circuit television for the first time Sept. 23.

Videotape will enable bidders to see machines in operation, something that has been impossible in the past.

■ Television has moved out of the living room and into the machine plant. On the 23d of this month bidders will sit back in comfortable hotel lounges and watch machinery they are interested in perform via a closed circuit television broadcast from the General Electric Co. plant at Lynn, Mass.

GE will be auctioning off \$3,-500,000 worth of used aircraft forging equipment. But instead of having bidders come into the plant from all over the country, they will assemble them in Boston and Chicago hotels. Then Industrial Plants Corp., New York auctioneers, will begin the sale on closed circuit television direct to the hotels.

A New Trend—This sale will mark the first time that television has been used for such a purpose. But it will be followed up shortly when the U. S. Surplus Disposal Administration auctions off machine tools and office supplies from depots in Philadelphia; Shelby, Ohio, and Granite City, Ill., on a six-city closed circuit.

Another first for the Industrial Plants Corp. auction will be the use of videotape to demonstrate the machine tools operating under power.

The videotaped demonstrations will be telecast on theater-size screens to an expected 750 bidders in the Kenmore Hotel, Boston, and the Sheraton - Blackstone Hotel, Chicago.

Many Advantages—Sidney Kriser, president of Industrial Plants Corp., said the principal advantage of the closed circuit auction will be the opportunity to show the machinery under power. This has never before been possible at any auction.

Another gain is that bidders will be able to assemble in comfortable hotel rooms instead of the plant. At the same time, GE will be spared the mass descent of bidders and the resulting disruption of other plant activities.

The nearly 500 late model used machine tools will also be open for inspection for 10 days prior to the auction.

Location Convenient—The Chicago auction location will be a convenience, Mr. Kriser said, to aircraft and missile companies headquartered in the Midwest, West and Southwest, who will save travel time for key executives.

A special two-way audio system will enable bids called out in either Boston or Chicago to be heard simultaneously in both cities. A split camera technique will telecast both the Boston auctioneer and the machine demonstrations into the Chicago bidding room. For greater clarity of viewing, details of the machine tools' operation will be blown up to many times actual size.

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Capacity 3/4"
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90 ton Niagara, Model 90-8-10

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5 ton P&H 40' Span 220 Volt D.C.

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10 ton Shaw 120' Span 230 Volt D.C.

15 ton Milwaukee 56' Span 440/3/60 A.C.

5 ton Aux. Arr. for Magnet Odr.

15 ton Shephard Niles 55' 6" Span 220/3/60

20 ton P&H 57' 6" Span 220/3/60

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120 ton Shephard Niles 67' Span 230 Volt D.C.

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7,000 lb. Draw Bench, 51 ft. Draw

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300 ton Southark Platen 28" x 28", Stroke 25"

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1	1500	G.E.	MT	6660	1187
1	800	Whse.	CW	550	1776
1	700	A.C.		2300	500
1	600	Whse.	CW-4-82D-15	440	1778
1	500	G.E.	MT-412	2200	439
1	500	Whse.	CW	550	250
1	300	G.E.	MT-561	2200	1800
1	200	G.E.	IM	440/2200	589
1	125	G.E.			
1	100	Whse.	MT-557	220/440	1200
1	100	G.E.	MT-564	440/220	450
1	250	G.E.	IM-10	220/440	875
1	250	A.C.	ANY	550	690
1	250	Whse.	CW	2200	450
1	250	Cr. Wh.	Size 29Q	2300	350
1	250	G.E.	MT-424Y	4000	237
1	250	G.E.	IE-13R	220	1800
2	200	Whse.	CW-800	2300	1775
1	200	Cr. Wh.	SR-26QB	440	505
2	200	G.E.	IM-17A	2200	435
3	100	A.C.		440	695

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3	100	Whse.	B.B.CB-607	220/440	1780
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1	500	G.E.	FT-50 AY	2200	8600
2	500	Whse.	CR-1115	2300	863/445
4	500	Whse.	CR-1216	2200	560
2	450	ELI.	F-3910	2200	1200
1	400	Whse.	CR-1151	6000/4000	3585
1	300	Whse.	CR-1002	2300/440	600
2	200	Whse.	CR-855S	220/440	1750
1	150	G.E.	D.P.	2200	875
1	150	Whse.	CR	440	580
1	125	Whse.	CR-764C	230/440	1160
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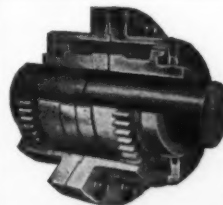
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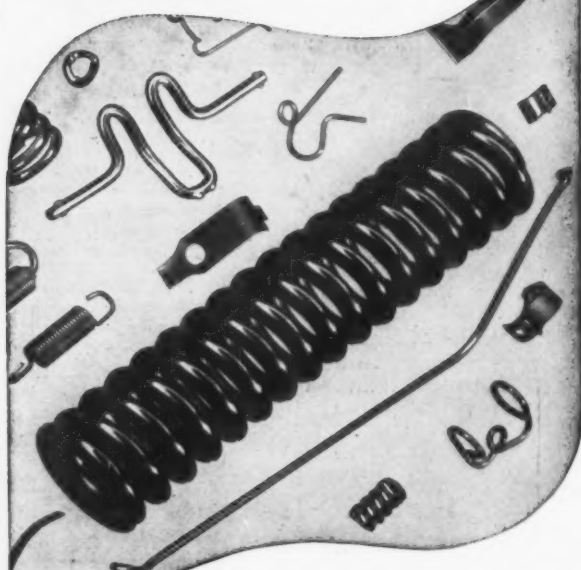
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Cutaway view shows the Dodge

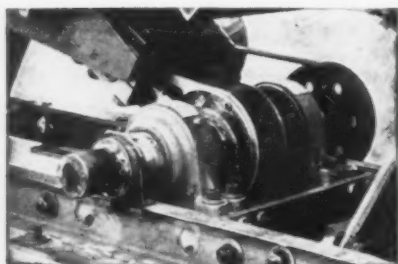
All-Steel pillow block with Timken bearing mounting. Of special design, the bearing has a tapered bore with self-aligning spherical outer surface—never needs adjustment.

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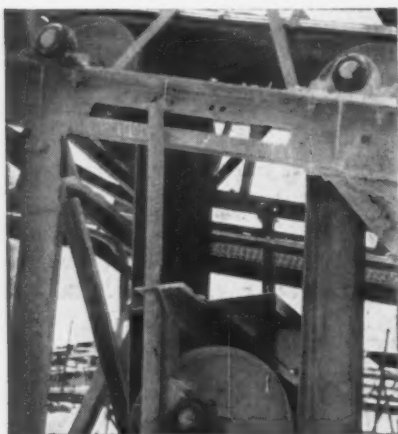
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